

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 14.02.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 464 125
 Injection pump
 Pump designation : PES4A80D410/3RS1300
 EP type number : 0 410 484 015
 Governor
 Governor design. : ~~RS~~325...1150A8C494
 Governor no. : 0 420 232 572

Customer-spec. information
 Customer : KHD

Engine : F4L912

1st version kW : 51.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.0...5.1

100 s: (4.8...5.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 325.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.5)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 50.0...51.0

1000 : (48.5...52.5)

Spread cm3 : 2.00

1000 : (3.50)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 9.50

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 8.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 485...545

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 915
Rack travel in m: 10.90...11.10
3rd speed rpm : 500
Rack travel in m: 11.40...11.50

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1190...1200

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 31.01.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 844 098
Injection pump
Pump designation : PES4A95D410RS2809
EP type number : 0 410 894 993
Governor
Governor design. : RQV300...1400AB1065-28L
Governor no. : 0 420 212 242

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm³/ : 6.5...6.6

100 s: (6.3...6.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 65.0...66.0

1000 : (63.0...68.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 10.70...10.90
3rd speed rpm : 670
Rack travel in m: 10.50...10.70
4th speed rpm : 1060
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm³/ : 48.0...51.0
1000 s: (45.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.80...15.20

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 9,7 m
Edition : 21.02.92
Replaces : 11.73
Test oil : ISO-4113

Combination no. : 0 400 856 080

Injection pump
Pump designation : PES6A95D421LS2328
EP type number : 0 410 896 968
Governor
Governor design. : RQ200/1050AB848DR
Governor no. : 0 420 203 084

Customer-spec. information
Customer : MAN

Engine : HMXU 036/37/38

1st version kW : 141.3
Rated speed : 2100
2nd version kW : 169.3
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

2nd version

Speed rpm : 1100

Del.quantity cm3/ : 125.0...128.0

1000 s: (123.0...130.0)

Spread cm3 : 3.50

1000 s: (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.30
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1225
Speed rpm : 0.00...1.00

2nd version

Setting point:

Speed rpm : 600
Rack travel in mm : 16.0

Testing:

1st rack travel in: 15.80
Speed rpm : 1110...1130
2nd rack travel in: 11.60
Speed rpm : 1135...1165
3rd rack travel in: 0...10
Speed rpm : 1180
4th rack travel in: 1240
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 200
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 350...390
Speed rpm : 350
Maximum rack travel: 1.00

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.60...10.90
3rd speed rpm : 800
Rack travel in m: 10.40...10.70

Torque control curve - 2nd version

1st speed rpm : -
Rack travel in m: -

FUEL DELIVERY CHARACTERISTICS

1st version

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Speed rpm : 500
Del.quantity cm3/ : 100.0...103.0
1000 s: (97.5...105.5)
Speed rpm : 800
Del.quantity cm3/ : 107.0...110.0
1000 s: (104.5...112.5)

2nd version

Speed rpm : 800
Del.quantity cm3/ : 124.0...129.0
1000 s: (121.5...131.5)
Speed rpm : 500
Del.quantity cm3/ : 0...122.5
1000 s: (0...125.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1090...1105

2nd version

1mm rack travel less than
full load rack tr: ?
Speed rpm : ?

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 14.50...14.90

Speed rpm : 100
Rack travel in mm : 18.0...21.0

LOW IDLE

Speed rpm : 200
Rack travel in mm : 6.00

Remarks:

Set low idle at stop screw.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 b 5
Edition : 14.02.92
Replaces : 02.91
Test oil : ISO-4113

Combination no. : 0 400 864 084

Injection pump
Pump designation : PES4A90D320/3RS2659
EP type number : 0 410 894 028
Governor
Governor design. : RSV325...1250A0C2182
-8R

Governor no. : 0 420 233 277

Customer-spec. information
Customer : MWM

Engine : D226B-4

1st version kW : 74.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

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Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 900

Del.quantity : 80.5...82.5

1000 : (78.5...84.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 89...97

Testing:
1st rack travel in: 9.70
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1230...1260
3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1415
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 455...515

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.50...11.60
4th speed rpm : 920
Rack travel in m: 11.00...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.60
2nd pressure hPa : 215
Rack travel in m: 10.90...11.00
3rd pressure hPa : 180
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900

A08

Speed rpm : 800
Del.quantity cm3/ : 84.5...86.5
1000 s: (82.0...89.0)
Aneroid pressure h: 215
Speed rpm : 500
Del.quantity cm3/ : 68.0...70.0
1000 s: (65.5...72.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.0...65.0
1000 s: (62.0...67.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:
: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 865 019
Injection pump
Pump designation : PES5A80D410/3RS2526
EP type number : 0 410 885 004
Governor
Governor design. : RSV325...1150A8C604-1L
Governor no. : 0 420 232 573

Customer-spec. information
Customer : KHD

Engine : F5L912

1st version kW : 62.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 6.5...6.6

100 s: (6.3...6.7)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.6)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 65.0...66.0

1000 : (63.5...67.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.60

Speed rpm : 1170...1180

2nd rack travel in: 4.00

Speed rpm : 1215...1245

3rd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 65...73

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 400...460

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1130

Rack travel in m: 12.60...12.70

2nd speed rpm : 500

Rack travel in m: 13.30...13.40

4th speed rpm : 910

Rack travel in m: 12.90...13.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1170...1180

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 093
Injection pump
Pump designation : PES6A80D410/3RS2527
EP type number : 0 410 886 059
Governor
Governor design. : RSV325...1150A8C604-1L
Governor no. : 0 420 232 573

Customer-spec. information
Customer : KHD

Engine : F6L912

1st version kW : 78.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 6.5...6.6

100 s: (6.3...6.7)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 325.0

Rack travel in mm : 8.9...9.1

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.6)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 65.0...66.0

1000 : (63.5...67.5)

Spread cm3 : 2.00

1000 : (3.50)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 11.60

Speed rpm : 1170...1180

2nd rack travel in: 4.00

Speed rpm : 1215...1245

3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1385
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 8.5

Speed rpm : 325

Rack travel in mm : 8.90...9.10

Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1130

Rack travel in m: 12.60...12.70

2nd speed rpm : 500

Rack travel in m: 13.30...13.40

3rd speed rpm : 850

Rack travel in m: 12.90...13.20

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 174
Injection pump
Pump designation : PES6A85D410/3RS2611
EP type number : 0 410 886 902
Governor
Governor design. : RSV325...1200AOC2148
-2L
Governor no. : 0 420 232 570

Customer-spec. information
Customer : KHD

Engine : F6L913

1st version kW : 81.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 5.8...5.9

100 s: (5.6...6.1)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 0.6...1.2

100 s: (0.4...1.4)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 58.5...59.5

1000 : (56.5...61.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 9.40

Speed rpm : 1235...1245

2nd rack travel in: 4.00

Speed rpm : 1295...1325

4th rack travel in: 1460

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 300

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 490...520

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 11.60...11.80

3rd speed rpm : 750

Rack travel in m: 11.60...11.70

4th speed rpm : 975

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 58.0...60.0
1000 s: (55.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1235...1245

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

APPLICATION

A14

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 866 175

Injection pump
Pump designation : PES6A90D320/3RS2660
EP type number : 0 410 896 078
Governor
Governor design. : RSV325...1175AOC2247
-2R
Governor no. : 0 420 233 290

Customer-spec. information
Customer : MWM

Engine : TD226-B6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0
Rack travel in mm : 6.7...6.9
Del.quantity cm3/ : 1.0...1.6
100 s: (0.8...1.8)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 700
Del.quantity : 83.0...84.0
1000 : (81.0...86.0)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 93...101

Testing:

1st rack travel in: 10.10
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1270...1300
3rd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.60...11.80
3rd speed rpm : 800
Rack travel in m: 11.60...11.80
4th speed rpm : 985
Rack travel in m: 11.20...11.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 300
Rack travel in m: 11.40...11.50
3rd pressure hPa : 250
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

A16

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 80.5...82.5
1000 s: (78.0...85.0)
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 85.0...87.0
1000 s: (82.5...89.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 66.0...67.0
1000 s: (64.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks: : RENAULT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 176
Injection pump
Pump designation : PES6A90D320/3RS2660
EP type number : 0 410 896 078
Governor
Governor design. : RSV325...1175AOC2249
-1R
Governor no. : 0 420 233 291

Customer-spec. information
Customer : MWM

Engine : TD226-B6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 9.8...9.9

100 s: (9.6...10.1)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 700

Del.quantity : 98.0...99.0

1000 : (96.0...101.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 11.20
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1245...1275
3rd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 365
Rack travel in m: 11.80...11.90
3rd pressure hPa : 275
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm³/ : 89.0...91.0
1000 s: (86.5...93.5)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 66.5...67.5
1000 s: (64.5...69.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a15
 Edition : 21.02.92
 Replaces : 10.91
 Test oil : ISO-4113

Combination no. : 0 400 874 238R

Injection pump
 Pump designation : PES4A95D410RS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 11.4...11.6
 100 s: (11.2...11.8)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 415.0
 Rack travel in mm : 6.6...6.8
 Del.quantity cm³/ : 1.7...2.1
 100 s: (1.4...2.3)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Del.quantity : 114.0...116.0
 1000 : (112.0...118.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 90...98

Testing:

1st rack travel in: 11.20
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1030...1060
3rd rack travel in: 4.00
Speed rpm : 1070...1090
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 415
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.70...12.90
3rd speed rpm : 800
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 111.5...114.5
1000 s: (109.0...117.0)
Speed rpm : 800
Del.quantity cm³/ : 123.0...126.0
1000 s: (120.5...128.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

A20

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 8
Edition : 22.01.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 400 876 379

Injection pump
Pump designation : PES6A95D32ORS2693
EP type number : 0 410 896 914
Governor
Governor design. : RSV300...1300AOC2248
-3R
Governor no. : 0 420 233 275

Customer-spec. information
Customer : DAF

Engine : NT 133

1st version kW : 133.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 7.50...10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:

1st rack travel in: 9.50
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1390...1420
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1570
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.50...10.60
2nd speed rpm : 500
Rack travel in m: 11.80...11.90
4th speed rpm : 1070
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 160
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm³/ : 73.0...75.0
1000 s: (70.5...77.5)
Aneroid pressure h: -

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Speed rpm : 600
Del.quantity cm³/ : 50.5...51.5
1000 s: (48.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 6
Edition : 14.02.92
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV400...1100A2C2204
-8L
Governor no. : 0 420 232 551

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076TDW02

1st version kW : 128.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 190...200

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.9...3.3

100 s: (2.7...3.5)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever
position degrees: 40...48

Testing:

1st rack travel in: 9.70
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.11

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.70...10.80
2nd speed rpm : 650
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 134.0...136.0
1000 s: (132.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

A24

Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 29.0...33.0
1000 s: (27.0...35.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHNE DEERE #RE47356
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 7
Edition : 14.02.92
Replaces : 08.91
Test oil : ISO-4113

Combination no. : 0 400 876 391

Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV425...1100A2C2225
-5L
Governor no. : 0 420 232 566

Customer spec. information
Customer : JOHN DEERE

Engine : 6076ARW-09

1st version kW : 145.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 2.6...3.0
100 s: (2.4...3.2)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 900
Del.quantity : 114.0...116.0
1000 : (112.0...118.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 37...45

Testing:

1st rack travel in: 10.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.90...12.00
2nd speed rpm : 750
Rack travel in m: 13.90...14.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 535
Rack travel in m: 12.30...12.40
3rd pressure hPa : 720
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del. quantity cm³/ : 143.5...147.5
1000 s: (141.5...149.5)
Aneroid pressure h: -
Speed rpm : 500

A26

Del. quantity cm³/ : 129.0...133.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.70...5.90
Del. quantity cm³/ : 26.0...30.0
1000 s: (24.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47502

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 393

Injection pump
Pump designation : PES6A90D410RS2723
EP type number : 0 410 896 085
Governor
Governor design. : RSV300...1350AOC2257
-L
Governor no. : 0 420 232 568

Customer spec. information
Customer : IVECO-AIFO

Engine : 8061.SRM 25

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 13.60...13.70

Del. quantity cm³/ : 10.9...11.0

100 s: (10.7...11.2)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del. quantity cm³/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Del. quantity : 109.0...110.0

1000 : (107.0...112.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 12.70

Speed rpm : 1390...1400

2nd rack travel in: 4.00

Speed rpm : 1595...1625

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Speed rpm : 300

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 98.0...100.0

1000 s: (95.5...102.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 20,9 z
Edition : 14.02.92
Replaces : 04.89
Test oil : ISO-4113

Combination no. : 0 401 840 108

Injection pump

Pump designation : PE12P110A520/4LS849
EP type number : 0 411 810 041
Governor
Governor design. : RQV250...1050PA889
Governor no. : 0 421 813 696

Customer-spec. information
Customer : MAN

Engine : D2842ME

1st version kW : 305.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

B01

Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 12.8...13.1

100 s: (12.6...13.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 800

travel mm : 5.30...5.70

3rd speed rpm : 1050

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 128.5...131.5

1000 : (126.0...134.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control Lever
position degrees: 113...121

Testing:
1st rack travel in: 9.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 250
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 385...510

START CUT-OUT

Speed 1/min : 190 (210)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1090...1100

Remarks:
: MAN-NR. 2-7905

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 c
Edition : 31.01.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 401 840 771

Injection pump
Pump designation : PE12P120A520/4LS3854
EP type number : 0 411 820 728
Governor
Governor design. : RQ950PA664-3
Governor no. : 0 421 801 629

Customer-spec. information
Customer : MAN

Engine : D2842LE

1st version kW : 443.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-

Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 250.0...252.0

1000 : (247.0...255.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1400

Speed rpm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1020...1030

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 m
Edition : 14.02.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 401 846 566

Injection pump
Pump designation : PE6P110A320RS526
EP type number : 0 411 816 178
Governor
Governor design. : RQ275/1000PA818-3
Governor no. : 0 421 801 534

Customer-spec. information
Customer : DAF

Engine : LT 160 G

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 13.00...14.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.0...14.0
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.30

Del. quantity cm³/ : 15.6...15.8

100 s: (15.3...16.0)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del. quantity cm³/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 156.0...158.0

1000 : (153.5...160.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1090...1120
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.1

Testing:

Speed rpm : 100
Minimum rack travel: 10.70
Speed rpm : 300
Rack travel in mm : 8.00...8.20
Rack travel in mm : 3.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 13.40...13.60
2nd speed rpm : 600
Rack travel in m: 14.40...14.60
3rd speed rpm : 750
Rack travel in m: 13.90...14.10
4th speed rpm : 825
Rack travel in m: 13.60...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.70...12.90
2nd pressure hPa : 290
Rack travel in m: 13.80...13.90
3rd pressure hPa : 260
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 980
Del.quantity cm3/ : 136.0...138.0
1000 s: (132.0...142.0)
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm3/ : 122.0...124.0
1000 s: (119.5...126.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1030...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 280.0...320.0
1000 s: (276.0...324.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 25.5...30.5
1000 s: (23.0...33.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 e
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 401 846 861

Injection pump
Pump designation : PE6P120A320RS3176-1
EP type number : 0 411 826 767
Governor
Governor design. : RQV250...1050PA808
Governor no. : 0 421 813 553

Customer-spec. information
Customer : ENASA

Engine : 96 R1 AX

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 1.90...2.50

3rd speed rpm : 700

travel mm : 4.50...5.10

4th speed rpm : 1095

travel mm : 8.00...8.20

5th speed rpm : 1185

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 250
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION
Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.40...12.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.30
2nd pressure hPa : 520
Rack travel in m: 11.50...11.60
3rd pressure hPa : 235
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1030
Del.quantity cm3/ : 215.0...221.0
1000 s: (212.0...224.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...175.0
1000 s: (151.0...179.0)
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 y
 Edition : 21.02.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 902
 Injection pump
 Pump designation : PE6P110A320RS308G-4
 EP type number : 0 411 816 766
 Governor
 Governor design. : RQV250...1025PA921
 -18
 Governor no. : 0 421 813 801

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD102FL

1st version kW : 239.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.4...3.6

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 1085

travel mm : 7.70...7.90

5th speed rpm : 1170

travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (194.0...200.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 12.40
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:

Speed rpm : 100
Minimum rack travel: 5.00
Speed rpm : 250
Rack travel in mm : 3.40...3.60

CONSTANT REGULATION

Speed rpm : 250...370

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 90
Rack travel in m: 10.10...10.20
3rd pressure hPa : 680
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 134.5...136.5
1000 s: (131.5...139.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.40...3.60
Del.quantity cm³/ : 15.0...19.0
1000 s: (12.0...22.0)
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 y1
Edition : 21.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 401 846 903

Injection pump
Pump designation : PE6P110A32JRS3080-5
EP type number : 0 411 816 767
Governor
Governor design. : RQV250...950PA921-19
Governor no. : 0 421 813 802

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD102FM

1st version kW : 235.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.4...3.6

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 750

travel mm : 6.30...6.70

4th speed rpm : 995

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (194.0...200.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:

1st rack travel in: 12.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 59...67

Testing:

Speed rpm : 100
Minimum rack travel: 5.00
Speed rpm : 250
Rack travel in mm : 3.40...3.60

CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 90
Rack travel in m: 10.10...10.20
3rd pressure hPa : 680
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 134.5...136.5
1000 s: (131.5...139.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.40...3.60
Del.quantity cm³/ : 15.0...19.0
1000 s: (12.0...22.0)
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Note remarks

Combination no. : 0 401 846 910

Customer-spec. information
Customer : MERCEDES-BENZ

1st version kW : 160.0
Rated speed : 2100

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.40...4.50
                  : (4.35...4.55)
Rack travel in mm : 9.00...12.00
Firing order      : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300

Tolerance \pm ° : 0.50 (0.75)

Time to cyl. no. : 6

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm³ : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...8.0

Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.4)

Spread cm3 : 0.6
100 s: (1.1)

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm³ : 8.50

1000 : (13.00)

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 119.0...125.0
1000 s: (116.5...127.5)
Spread cm³ : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 w
Edition : 24.01.92
Replaces : 01.91
Test oil : ISO-4113

Combination no. : 0 401 846 918

Injection pump
Pump designation : PE6P110A320LS3851
EP type number : 0 411 816 765
Governor
Governor design. : RQV300...1050PA884-6
Governor no. : 0 421 813 832

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm³ : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...8.0

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm³ : 0.6

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.50...1.00

2nd speed rpm : 460

travel mm : 2.70...3.20

3rd speed rpm : 738

travel mm : 4.60...5.10

4th speed rpm : 1107

travel mm : 7.90...8.40

5th speed rpm : 1370

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 122.0...124.0
1000 : (119.5...126.5)
Spread cm3 : 8.50
1000 : (13.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 83...91

Testing:
Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.40...7.00

CONSTANT REGULATION
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 119.0...125.0
1000 s: (116.5...127.5)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAE 12,0 a
Edition : 22.01.92
Replaces : 03.91
Test oil : ISO-4113

Combination no. : 0 401 846 933

Injection pump
Pump designation : PE6P110A32ORS3260
EP type number : 0 411 816 775
Governor
Governor design. : RQ250/1050PA969
Governor no. : 0 421 801 538

Customer-spec. information
Customer : HAEP

Engine : X6130 NA

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1035

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 13.0...13.3

100 s: (12.7...13.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 12.60...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1035

Del.quantity : 130.0...133.0

1000 : (127.5...135.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 13.4

Testing:

1st rack travel in: 10.40

Speed rpm : 1085...1100

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed rpm : 0.00...1.80

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel : 9.30
Speed rpm : 250
Rack travel in mm : 7.70...7.90
Rack travel in mm : 2.00
Speed rpm : 295...335

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1035
Rack travel in m: 11.40...11.50
2nd speed rpm : 600
Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 129.0...134.0
1000 s: (126.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1085...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.60...8.00
Del.quantity cm3/ : 15.0...20.0
1000 s: (12.5...22.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b 1
Edition : 14.02.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 401 846 938

Injection pump
Pump designation : PE6P110A32ORS3266
EP type number : 0 412 816 777
Governor
Governor design. : RQV300...1300PA996
-1K
Governor no. : 0 421 815 278

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD63E

1st version kW : 133.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
: (2.30...2.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 10.30...10.40

Del. quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 330.0

Rack travel in mm : 5.4...5.6

Del. quantity cm3/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
travel mm : 1.20...1.60

2nd speed rpm : 500
travel mm : 2.90...3.50

3rd speed rpm : 900
travel mm : 4.70...5.30

4th speed rpm : 1370
travel mm : 9.80...10.00

5th speed rpm : 1450
travel mm : 11.00...11.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1470
Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 780

Aneroid pressure h: 1200
Del.quantity : 102.0...104.0
1000 : (100.0...106.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 330
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 330...600

TORQUE CONTROL
Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 780
Rack travel in m: 10.30...10.40
2nd speed rpm : 1050
Rack travel in m: 10.80...11.00
3rd speed rpm : 1300
Rack travel in m: 11.20...11.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 11.20...11.40

Measurement
Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 140
Rack travel in m: 8.70...8.80

3rd pressure hPa : 650
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 114.0...118.0
1000 s: (111.0...121.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm3/ : 118.0...124.0
1000 s: (115.0...127.0)
Aneroid pressure h: --
Speed rpm : 780
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...130.0
1000 s: (96.0...134.0)
Rack travel in mm : 10.40...10.90

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 953

Injection pump
Pump designation : PE6P110A720RS3225Y
EP type number : 0 411 816 782
Governor
Governor design. : RQ275/1200PA913-1
Governor no. : 0 421 801 549

Customer-spec. information
Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 12.9...13.1

100 s: (12.6...13.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del. quantity cm³/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 129.0...131.0

1000 : (126.5...133.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1200
Rack travel in m: 13.60...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 360
Rack travel in m: 12.10...12.20
3rd pressure hPa : 270
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

B22

Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 954
Injection pump
Pump designation : PE6P110A72ORS3225Y
EP type number : 0 411 816 782
Governor
Governor design. : RQV275...1200PA910
Governor no. : 0 421 813 746

Customer-spec. information
Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 015
Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values —

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 12.9...13.1
100 s: (12.6...13.3)

Spread cm³ : 0.4
100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 7.2...7.4
Del. quantity cm³/ : 1.4...1.9
100 s: (1.1...2.1)
Spread cm³ : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40
2nd speed rpm : 450
travel mm : 2.90...3.30
3rd speed rpm : 800
travel mm : 4.70...5.10
4th speed rpm : 1200
travel mm : 7.80...8.00
5th speed rpm : 1500
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1235
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del. quantity : 129.0...131.0
1000 : (126.5...133.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.90
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 360
Rack travel in m: 12.30...12.40
3rd pressure hPa : 270
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 31.01.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 963
 Injection pump
 Pump designation : PE6P120A720RS3291
 EP type number : 0 411 826 800
 Governor
 Governor design. : RQV300...1000PA1016-8
 Governor no. : 0 421 813 983
 Customer-spec. information
 Customer : IVECO-UNIC
 Engine : 8210.22.419

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.6

Del. quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 8.30...8.50

2nd speed rpm : 300

travel mm : 1.10...1.50

3rd speed rpm : 450

travel mm : 2.70...3.30

4th speed rpm : 700

travel mm : 4.60...5.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 8.70...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 10.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION
Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 200
Rack travel in m: 9.90...10.00
3rd pressure hPa : 215
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 500
Del.quantity cm3/ : 197.0...203.0
1000 s: (194.0...206.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 215.0...235.0
1000 s: (211.0...239.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.60
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 c1
 Edition : 24.01.92
 Replaces : 02.89
 Test oil : ISO-4113
 Combination no. : 0 401 848 736
 Injection pump
 Pump designation : PE8P120A920/5LS3812
 EP type number : 0 411 828 709
 Governor
 Governor design. : RQV300...1200PA357
 Governor no. : 0 421 813 188

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8281.02.001

1st version kW : 257.4
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.7
 Del.quantity cm3/ : 2.6...3.4
 100 s: (2.3...3.7)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.70
 2nd speed rpm : 450
 travel mm : 2.70...3.40
 3rd speed rpm : 900
 travel mm : 5.70...6.10
 4th speed rpm : 1200
 travel mm : 8.20...8.40
 5th speed rpm : 1500
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200

Del.quantity : 150.0...152.0
1000 : (147.0...155.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 8.30
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack trave: 7.00
Speed rpm : 300
Rack travel in min : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 330...430

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.30
Speed rpm : 1240...1250

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 k 8
Edition : 03.03.89
Replaces : 2.12.88
Test oil : ISO-4113

Combination no. : 0 401 848 762

Injection pump
Pump designation : PE8P120A320LS3807-10
EP type number : 0 411 828 713
Governor
Governor design. : RQV300...1150PA545-7
Governor no. : 0 421 813 595

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 422 A

1st version kW : 243.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.40...1.60

2nd speed rpm : 800
travel mm : 6.00...6.20

3rd speed rpm : 1200
travel mm : 8.00...8.50

4th speed rpm : 1300
travel mm : 9.70...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 700
Del.quantity : 159.0...161.0
1000 : (156.0...164.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 15...23

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 750
Rack travel in m: 11.00...11.20
3rd speed rpm : 700
Rack travel in m: 11.00...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 10.10...10.20
2nd pressure hPa : 500

CO2

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 173.5...175.5
1000 s: (170.5...178.5)
Spread cm³ : 7.00
1000 s: (12.0)
Aneroid pressure h: 700
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm³ : 7.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,8 c1
 Edition : 31.01.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 401 848 820

Injection pump
 Pump designation : PE8P120A720LS3281-1
 EP type number : 0 411 828 727
 Governor
 Governor design. : RQV300...1050PA1009
 Governor no. : 0 421 813 938

Customer-spec. information
 Customer : KHD

Engine : BF8L513LC

1st version kW : 243.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 18.6...18.8
 100 s: (18.3...19.1)

Spread cm3 : 0.6
 100 s: (1.0)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 3.0...3.6
 100 s: (2.7...3.9)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 2.40...2.80
 2nd speed rpm : 450
 travel mm : 3.40...4.00
 3rd speed rpm : 725
 travel mm : 5.30...5.90
 4th speed rpm : 1100
 travel mm : 9.10...9.30
 5th speed rpm : 1175
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1070
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050

Aneroid pressure h: 850
Del.quantity : 186.0...188.0
1000 : (183.0...191.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 119...127

Testing:
1st rack travel in: 12.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 86...94

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.30...13.40
2nd speed rpm : 650
Rack travel in m: 13.50...13.70
3rd speed rpm : 805
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 850
Rack travel mm : 13.50...13.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.00
2nd pressure hPa : 450
Rack travel in m: 13.00...13.10

C04

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 850
Speed rpm : 650
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 124.0...126.0
1000 s: (121.0...129.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...195.0
1000 s: (-)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 16,0 d6
 Edition : 22.01.92
 Replaces : 01.90
 Test oil : ISO-4113
 Combination no. : 0 401 849 750
 Injection pump
 Pump designation : PE10P110A920/5LS3164
 EP type number : 0 411 819 708
 Governor
 Governor design. : RGV300...1150PA549-5
 Governor no. : 0 421 813 844

Customer-spec. information
 Customer : KHD

Engine : BF10L513 ECE

1st version kW : 294.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

Firing order : 1-10- 9- 4- 3- 6- 5-
 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.20...13.30
 Del.quantity cm3/ : 15.3...15.5
 100 s: (15.0...15.8)
 Spread cm3 : 0.4
 100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.7...7.9
 Del.quantity cm3/ : 1.2...1.7
 100 s: (1.0...2.0)
 Spread cm3 : 0.4
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.40
 2nd speed rpm : 450
 travel mm : 2.70...3.20
 3rd speed rpm : 800
 travel mm : 5.10...5.60
 4th speed rpm : 1200
 travel mm : 8.40...8.60
 5th speed rpm : 1320
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 1200
 Del.quantity : 153.0...155.0
 1000 : (150.0...158.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 300...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 660
Rack travel in m: 12.75...12.85
3rd pressure hPa : 480
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 10,8 a
Edition : 21.02.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 402 036 748

Injection pump
Pump designation : PES6P120A320/3RS3297
EP type number : 0 412 026 753
Governor
Governor design. : RQV375...1000PA1022
Governor no. : 0 421 813 981

Customer-spec. information
Customer : SACM

Engine : UD18L6R3D

1st version kW : 219.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 20.9...21.1
100 s: (20.6...21.4)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 375.0
Rack travel in mm : 4.9...5.3
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 8.30...8.50
2nd speed rpm : 375
travel mm : 1.70...2.10
3rd speed rpm : 750
travel mm : 5.60...6.20
4th speed rpm : 1350
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 10.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack trave: 6.60
Speed rpm : 375
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 370...500

START CUT-OUT

Speed 1/min : 295 (315)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 390.0...420.0
1000 s: (386.0...424.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 4.90...5.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 6
 Edition : 14.02.92
 Replaces : 02.91
 Test oil : ISO-4113

Combination no. : 0 402 046 313

Injection pump
 Pump designation : PES6P120A32ORS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1050PA495-8
 Governor no. : 0 421 813 482

Customer-spec. information
 Customer : RVI

Engine : MIDS062045

1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 118

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 2.3...2.7
 100 s: (2.0...3.0)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20
 2nd speed rpm : 450
 travel mm : 3.30...3.80
 3rd speed rpm : 800
 travel mm : 5.70...6.00
 4th speed rpm : 1050
 travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700
 Del.quantity : 177.5...179.5
 1000 : (174.5...182.5)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 9.30
Speed rpm : 1125...1135
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 200
Minimum rack travel: 6.60
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 360
Rack travel in m: 9.80...9.90
3rd pressure hPa : 160
Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 179.0...185.0
1000 s: (176.0...188.0)
Aneroid pressure h: -

C10

Speed rpm : 500
Del.quantity cm³/ : 109.5...111.5
1000 s: (106.5...114.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 151.0...171.0
1000 s: (147.0...175.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 23.5...27.5
1000 s: (20.5...30.5)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 s
Edition : 12.06.90
Replaces :
Test oil : ISO-4113

Combination no. : 0 402 046 323

Injection pump
Pump designation : PES6P120A720LS470
EP type number : 0 412 026 046
Governor
Governor design. : RQ250/1050PA767
Governor no. : 0 421 801 311

Customer spec. information
Customer : MAN

Engine : D2866LUE/DSB

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.1)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1000
Del.quantity : 198.0...200.0
1000 : (195.0...203.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.50

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.50...10.60
2nd speed rpm : 750
Rack travel in m: 12.00...12.10
3rd speed rpm : 865
Rack travel in m: 11.60...11.80
4th speed rpm : 985
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 190 (210)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 5
 Edition : 21.02.92
 Replaces : 04.90
 Test oil : ISO-4113
 Combination no. : 0 402 046 328
 Injection pump
 Pump designation : PES6P120A320RS419-2
 EP type number : 0 412 026 048
 Governor
 Governor design. : RQ275/950PA753-1
 Governor no. : 0 421 801 377

Customer-spec. information
 Customer : RVI

Engine : MIDS/PS062045 FC

1st version kW : 144.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500
 Rack travel in mm : 8.70...8.80
 Del.quantity cm3/ : 12.0...12.2
 100 s: (11.7...12.5)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 525
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 500
 Aneroid pressure h: 700
 Del.quantity : 120.0...122.0
 1000 : (117.0...125.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 525
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 7.20
 Speed rpm : 1015...1030
 2nd rack travel in: 4.00

Speed rpm : 1050...1080
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.4

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 8.70...8.80
2nd speed rpm : 950
Rack travel in m: 8.00...8.20
3rd speed rpm : 750
Rack travel in m: 8.30...8.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 3.70...8.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 240
Rack travel in m: 8.40...8.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 950
Del.quantity cm³/ : 140.0...144.0
1000 s: (137.0...147.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 107.0...109.0
1000 s: (104.0...112.0)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.10...4.50

Remarks:

:
Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 6
Edition : 21.02.92
Replaces : 03.90
Test oil : ISO-4113

Combination no. : 0 402 046 329

Injection pump
Pump designation : PES6P120A320RS419-2
EP type number : 0 412 026 048
Governor
Governor design. : RQ275/950PA843
Governor no. : 0 421 801 378

Customer-spec. information
Customer : RVI

Engine : MIDS/PS062045D/A

1st version kW : 129.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 10.6...10.8

100 s: (10.3...11.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 3.1...3.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 525

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Del.quantity : 106.0...108.0

1000 : (103.0...111.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 525

Rack travel in mm : 20.0

Testing:

1st rack travel in: 6.50

Speed rpm : 1005...1020

2nd rack travel in: 4.00

Speed rpm : 1030...1060

4th rack travel in: 1300
Speed rpm : 0.00...1.00

Omnibus

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 3.2

Testing:

Speed rpm : 200

Minimum rack travel: 5.20

Speed rpm : 275

Rack travel in mm : 3.10...3.30

Rack travel in mm : 2.00

Speed rpm : 300...340

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 8.00...8.10

2nd speed rpm : 950

Rack travel in m: 7.30...7.40

3rd speed rpm : 775

Rack travel in m: 7.60...7.80

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950

Del.quantity cm³/ : 125.0...129.0

1000 s: (122.0...132.0)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 145.0...165.0

1000 s: (141.0...169.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 3.10...3.30

Remarks:

:

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 m
Edition : 31.01.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 0 402 046 344

Injection pump
Pump designation : PES6P120A320RS3277
EP type number : 0 412 026 747
Governor
Governor design. : RQV275...1050PA995
Governor no. : 0 421 813 929

Customer-spec. information
Customer : RVI

Engine : MIDR 06 20 45

1st version kW : 222.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.5...5.9

Del.quantity cm3/ : 2.1...2.7

100 s: (1.8...3.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1130
travel mm : 8.20...8.40

2nd speed rpm : 275
travel mm : 0.70...1.10

3rd speed rpm : 500
travel mm : 3.50...4.10

4th speed rpm : 750
travel mm : 5.30...5.70

5th speed rpm : 1450
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1000

Del.quantity : 184.0...186.0

1000 : (181.0...189.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:
1st rack travel in: 8.80
Speed rpm : 1135...1145
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1.50
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 244...252

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 275
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 9.80...9.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.80...8.00
2nd pressure hPa : 360
Rack travel in m: 9.20...9.30
3rd pressure hPa : 200
Rack travel in m: 8.30...8.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050

Del.quantity cm³/ : 172.0...178.0
1000 s: (169.0...181.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 109.0...111.0
1000 s: (106.0...114.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.80
Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.90
Del.quantity cm³/ : 21.0...27.0
1000 s: (18.0...30.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 725A
Injection pump
Pump designation : PES6P120A820LS3077
-10
EP type number : 0 412 026 714
Governor
Governor design. : RQ300/1100PA606-2
Governor no. : 0 421 801 249

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM407A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.40...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 280
Rack travel in m: 10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 141.0...144.0
1000 s: (8175.5...184.5
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f1
Edition : 14.02.92
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump
Pump designation : PES6P120A320RS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...950FA728-1
Governor no. : 0 421 813 465

Customer-spec. information
Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.9...7.3

Del.quantity cm3/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.30...1.70

2nd speed rpm : 450
travel mm : 3.30...3.70

3rd speed rpm : 800
travel mm : 5.60...6.00

4th speed rpm : 950
travel mm : 6.70...6.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 59...67

Testing:

1st rack travel in: 11.50

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

Speed rpm : 200

Minimum rack travel: 7.10

Speed rpm : 275

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 520

Rack travel in m: 11.80...11.90

3rd pressure hPa : 200

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 950

Del.quantity cm³/ : 198.0...204.0

1000 s: (195.0...207.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 118.0...120.0

1000 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 155.0...185.0

1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.60

Del.quantity cm³/ : 22.0...26.0

1000 s: (19.0...29.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 e
Edition : 14.02.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 0 402 046 784

Injection pump
Pump designation : PES6P120A32ORS3139
EP type number : 0 412 026 718
Governor
Governor design. : RGV275...1000PA728-2
Governor no. : 0 421 813 599

Customer-spec. information
Customer : RVI

Engine : MIDR 062045 E

1st version kW : 236.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275
Rack travel in mm : 5.2...5.6
Del.quantity cm3/ : 2.5...2.9
100 s: (2.2...3.2)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10
2nd speed rpm : 450
travel mm : 3.30...3.70
3rd speed rpm : 800
travel mm : 5.60...6.00
4th speed rpm : 1000
travel mm : 7.00...7.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 207.0...209.0
1000 : (204.0...212.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 10.20

Speed rpm : 1065...1075

2nd rack travel in: 4.00

Speed rpm : 1180...1210

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 64...72

Testing:

Speed rpm : 200

Minimum rack travel: 7.20

Speed rpm : 275

Rack travel in mm : 5.30...5.70

CONSTANT REGULATION

Speed rpm : 230...320

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 320

Rack travel in m: 10.50...10.60

3rd pressure hPa : 160

Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm³/ : 219.0...225.0

1000 s: (216.0...228.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 112.0...114.0

1000 s: (109.0...117.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 161.0...181.0

1000 s: (157.0...185.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.60

Del.quantity cm³/ : 25.5...29.5

1000 s: (22.5...32.5)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 j
Edition : 28.02.92
Replaces : 08.91
Test oil : ISO-4113
Combination no. : 0 402 046 819
Injection pump
Pump designation : PES6P120A320RS3269
EP type number : 0 412 026 743
Governor
Governor design. : RQV275...1000PA983
Governor no. : 0 421 813 903

Customer-spec. information
Customer : RVI

Engine : MIDR 06 35 40 L

1st version kW : 283.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 26.8...27.0

100 s: (26.5...27.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.6

Del.quantity cm3/ : 2.4...2.8
100 s: (2.1...3.1)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070
travel mm : 7.70...7.90

2nd speed rpm : 275
travel mm : 0.70...1.10

3rd speed rpm : 500
travel mm : 3.50...4.10

4th speed rpm : 750
travel mm : 5.30...5.70

5th speed rpm : 1450
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1125
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 268.0...270.0
1000 : (265.0...273.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:

1st rack travel in: 12.10
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 247...255

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 440
Rack travel in m: 12.50...12.70
3rd pressure hPa : 200
Rack travel in m: 10.40...10.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1000

Del.quantity cm3/ : 241.0...247.0
1000 s: (238.0...250.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.90
Del.quantity cm3/ : 24.0...28.0
1000 s: (21.0...31.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 835

Injection pump
Pump designation : PES6P120A320RS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQ750PA1026
Governor no. : 0 421 801 637

Customer spec. information
Customer : RVI

Engine : MIDR C62045

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.80...5.00

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 255.0...257.0

1000 : (252.0...260.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 787...800

4th rack travel in: 900

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIN
Edition : 05.07.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 070 700

Injection pump
Pump designation : PES12P110A920LS3274
EP type number : 0 412 010 700
Governor
Governor design. : RSUV300...1100POA360
Governor no. : 0 421 829 109

Customer-spec. information
Customer : FINCANTIERI

Engine : 12130 IS

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 16.8...17.1

100 s: (16.5...17.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.5

Del.quantity cm3/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 168.0...171.0

1000 : (165.5...173.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 56...64

Testing:

1st rack travel in: 12.30

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1175...1205

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.3

Speed rpm : 300

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 330...370

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.30...13.40

2nd speed rpm : 500

Rack travel in m: 13.30...13.50

3rd speed rpm : 350

Rack travel in m: 14.50...15.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1140...1150

LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.10...7.50

Del.quantity cm³/ : 16.0...21.0

1000 s: (13.5...23.5)

Spread cm³ : 4.50

1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 13,4 h
 Edition : 28.02.92
 Replaces : 23.08.89
 Test oil : ISO-4113

Combination no. : 0 402 076 704

Injection pump
 Pump designation : PES6P110A420LS3008
 Governor
 Governor design. : RSV350...1050P0/386D
 R

Customer-spec. information
 Customer : IH

Engine : DTI-817C

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Inlet press., bar : 2.8

Test nozzle holder
 assembly : 1 688 901 003

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,7

Test lines : 9 681 230 713

Outside diameter
 x Wall thickness
 x Length mm : 6,00X2,00X1016

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10
 : (1,95...2,15)
 Rack travel in mm : 9,00...12,00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm3/ : 10,4...11,8
 100 s : (-)

2nd speed rpm : 1000
 Rack travel in mm : 12,00
 Del.quantity cm3/ : 17,6...18,6
 100 s : (-)

3rd speed rpm : 600
 Rack travel in mm : 6,00
 Del.quantity cm3/ : 3,4...4,4
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 800
 Del.quantity : 196,0...202,0
 1000 : (-)

RATED SPEED

1st version
 Control lever
 position degrees: 39...47

Testing:
 1st rack travel in: 12,30
 Speed rpm : 1090...1110
 2nd rack travel in: 8,00
 Speed rpm : 1135...1165
 3rd rack travel in: 1,30...6,40
 Speed rpm : 1190
 4th rack travel in: 1240
 Speed rpm : 1,30...2,00

LOW IDLE 1

Control lever
 position degrees: 17...25
 Setting point w/out bumper spring
 Speed rpm : 350

Rack travel in mm : 5,50

Testing:

Speed rpm : 100
Minimum rack travel: 20,00
Speed rpm : 350
Rack travel in mm : 5,40...5,60
Rack travel in mm : 1,65
Speed rpm : 390...410

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030
Rack travel in m: 9,00
2nd speed rpm : 750
Rack travel in m: 9,70...9,90
3rd speed rpm : 450
Rack travel in m: 9,70...9,90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 132
Rack travel mm : *

Measurement

Speed 1/min : 500

1st pressure hPa : 488
Rack travel in m: **

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 750
Del.quantity cm³/ : 230,0...240,0
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158,5...159,5
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11,00
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 225,0...295,0
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1145
Rack travel in mm : 4,70...5,70

LOW IDLE

Speed rpm : 350
Del.quantity cm³/ : 24,0...34,0
1000 s: (-)

Remarks:

* Start of LDA (manifold-pressure compensator) movement

** Ende der LDA-Bewegung

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 2
 Edition : 14.02.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 076 742
 Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1050P2A534-
 7
 Governor no. : 0 421 833 356

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HZ030

1st version kW : 193.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 3.9...4.3

100 s: (3.6...4.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 155.5...157.5

1000 : (153.5...159.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:
1st rack travel in: 11.20
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1155...1165
3rd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.3

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.70...6.90

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 700
Rack travel in m: 13.60...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 390
Rack travel in m: 11.40...11.50
3rd pressure hPa : 605
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 190.0...194.0
1000 s: (188.0...196.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 116.5...120.5
1000 s: (114.5...122.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 39.0...43.0
1000 s: (36.5...45.5)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: JOHN DEERE # RE47549

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 3
 Edition : 14.02.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 402 076 743
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV425...1100P2A534-
 8
 Governor no. : 0 421 833 370

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 AN Q30

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm3 : 0,4

100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 2.5...3.0
 100 s: (2.2...3.1)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 150.0...152.0
 1000 : (147.5...154.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 43...51

Testing:
1st rack travel in: 10.80
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1230
3rd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 700
Rack travel in m: 12.80...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.80...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 173.5...178.5
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 25.0...30.0
1000 s: (22.5...31.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE47394

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 630 807
Injection pump
Pump designation : PE12P120A120RS7253
EP type number : 0 412 620 831
Governor
Governor design. : RQV350...900PA935-1
Governor no. : 0 421 813 820

Customer spec. information
Customer : BAUDOUIN

Engine : 12 P 15-2

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 500

travel mm : 3.10...3.70

3rd speed rpm : 740

travel mm : 5.70...6.30

4th speed rpm : 960

travel mm : 8.60...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 339.0...341.0

1000 : (336.0...344.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 11.00

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1070...1040

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 86...94

Testing:

Speed rpm : 100

Minimum rack travel: 6.30

Speed rpm : 350

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 330...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 u
Edition : 20.12.91
Replaces : 09.86
Test oil : ISO-4113

Combination no. : 0 402 640 801

Injection pump
Pump designation : PE12P120A320LS7805
EP type number : 0 412 620 802
Governor
Governor design. : RQV350...1050PA781
Governor no. : 0 421 813 511

Customer spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 463.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...160

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.40...14.50

Del. quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del. quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)

Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.90...2.40
2nd speed rpm : 449
travel mm : 3.00...3.50
3rd speed rpm : 760
travel mm : 4.50...5.00
4th speed rpm : 1107
travel mm : 7.50...8.00
5th speed rpm : 1410
travel mm : 10.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1180
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030
Aneroid pressure h: 700
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 350
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.80...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : 335
Rack travel in m: 12.40...12.60
2nd pressure hPa : 485
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

D12

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 208.0...214.0
1000 s: (205.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 153.0...155.0
1000 s: (150.0...158.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 640 837

Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
Governor
Governor design. : RQ400/1065PA1024
Governor no. : 0 421 801 634

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0
Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 1-2- 1- 5- 7- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1065
Aneroid pressure h: 1000
Del.quantity : 211.0...213.0
1000 : (208.0...216.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1110...1125
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:

Speed rpm : 300
Minimum rack travel: 7.30
Speed rpm : 400
Rack travel in mm : 5.20...5.80
Rack travel in mm : 2.00
Speed rpm : 460...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.90...11.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.60...11.80
2nd pressure hPa : 500
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 320 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 141.0...143.0
1000 s: (138.0...146.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.80
Del.quantity cm³/ : 16.0...22.0
1000 s: (13.0...25.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump
Pump designation : PE6P120A320LS7808-10
EP type number : 0 412 626 850
Governor
Governor design. : RQ300/1050PA762-4
Governor no. : 0 421 801 390

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 240.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10
3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.70
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1450
Speed rpm : 1050
Del.quantity cm3/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1450
Speed rpm : 800
Del.quantity cm3/ : 237.0...241.0
1000 s: (234.0...244.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 142.0...144.0
1000 s: (139.0...147.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 g
Edition : 21.02.92
Replaces : 08.91
Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 840
Governor
Governor design. : RQ300/1050PA972
Governor no. : 0 421 801 542

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.20...5.90
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.50...10.70
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.20...10.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r
Edition : 21.02.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 854
Governor
Governor design. : RQV300...1050PA797
-17
Governor no. : 0 421 813 884

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del. quantity cm³/ : 18.2...18.4
100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.9
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm³ : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 637
travel mm : 4.90...5.40
3rd speed rpm : 830
travel mm : 6.00...6.50
4th speed rpm : 1107
travel mm : 8.30...8.80
5th speed rpm : 1218
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1125
Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
 Aneroid pressure h: 800
 Del. quantity : 182.0...184.0
 1000 : (179.0...187.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 12.40
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00
 Speed rpm : 1195...1225
 4th rack travel in: 1300
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 80...88

Testing:

Speed rpm : 200
 Minimum rack travel: 7.60
 Speed rpm : 300
 Rack travel in mm : 5.40...5.90

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude Compensator Test

1st version

Setting
 Speed rpm : 600
 Pressure hPa : 800
 Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 350
 Rack travel in m: 10.80...11.00
 2nd pressure hPa : 500
 Rack travel in m: 11.60...11.80
 3rd pressure hPa : 1050
 Rack travel in m: 12.60...12.80
 4th pressure hPa : 1150
 Rack travel in m: 12.90...13.10
 5th pressure hPa : -
 Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
 Speed rpm : 1050
 Del. quantity cm³/ : 201.0...204.0
 1000 s: (198.0...207.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: 1500
 Speed rpm : 800
 Del. quantity cm³/ : 205.0...209.0
 1000 s: (202.0...212.0)
 Spread cm³ : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del. quantity cm³/ : 132.0...134.0
 1000 s: (129.0...137.0)
 Spread cm³ : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
 Del. quantity cm³/ : 200.0...220.0
 1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 h
Edition : 28.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 646 923

Injection pump
Pump designation : PE6P130A720RS7225
EP type number : 0 412 636 817
Governor
Governor design. : RQV300...900PA946
Governor no. : 0 421 813 845

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8210.42.061

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 11.50...12.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 27.0...27.3

100 s: (26.6...27.6)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del.quantity cm³/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 945
travel mm : 8.40...8.60

2nd speed rpm : 300
travel mm : 1.00...1.40

3rd speed rpm : 500
travel mm : 3.30...3.90

4th speed rpm : 700
travel mm : 5.50...5.90

5th speed rpm : 1200
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 935

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 270.0...273.0

1000 : (266.5...276.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 75...83

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 320...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 350
Rack travel in m: 12.00...12.10
3rd pressure hPa : 300
Rack travel in m: 10.90...11.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm³/ : 285.0...292.0
1000 s: (281.5...295.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 202.0...205.0
1000 s: (198.5...208.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.40...4.80
Del.quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 p
Edition : 21.02.92
Replaces : 05.91
Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump
Pump designation : PE6P120A320LS7837
EP type number : 0 412 626 842
Governor
Governor design. : RQ300/950PA971-3
Governor no. : 0 421 801 557

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. l/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.70...14.90
Del.quantity cm³/ : 23.3...23.5
100 s: (23.0...23.8)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.3...6.9
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.50
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 950
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.60...15.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.70...9.90
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1450
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 950

Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.50
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.30...9.50

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 b
Edition : 21.02.92
Replaces : 03.91
Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump
Pump designation : PE6P120A320LS7837
EP type number : 0 412 626 842
Governor
Governor design. : RQV300...950PA797-20
Governor no. : 0 421 813 893

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 567
travel mm : 4.40...4.90

3rd speed rpm : 780
travel mm : 6.10...6.60

4th speed rpm : 1009
travel mm : 8.30...8.80

5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1025
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:
1st rack travel in: 14.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in min : 5.60...6.20

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.10
2nd speed rpm : 950
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.60...15.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 9.70...9.90
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1450
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1700
Speed rpm : 950
Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1700
Speed rpm : 800
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:
:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 4
Edition : 21.02.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 0 402 646 930

Injection pump
Pump designation : PE6P120A320LS7834
EP type number : 0 412 626 841
Governor
Governor design. : RQ300/1050PA972-7
Governor no. : 0 421 801 583

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1100
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 700
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1400
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1550
Rack travel in m: 15.10...15.30
5th pressure hPa : -
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050

Del.quantity cm³/ : 234.0...237.0
1000 s: (231.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm³/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 10.40...10.70

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 n
Edition : 21.02.92
Replaces : 09.91
Test oil : ISO-4113
Combination no. : 0 402 646 936
Injection pump
Pump designation : PE6P120A320RS7230
EP type number : 0 412 626 843
Governor
Governor design. : RQV250...1000FA990K
Governor no. : 0 421 815 274

Customer-spec. information
Customer : DAF

Engine : WS 315 G

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 13.80...14.80

ED1

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 26.4...26.6

100 s: (26.1...26.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 685

travel mm : 6.20...6.60

4th speed rpm : 1030

travel mm : 9.60...10.00

5th speed rpm : 1145

travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 12.90...15.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 264.0...266.0

1000 : (261.0...269.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 13.30...13.50
4th speed rpm : 825
Rack travel in m: 13.80...14.00
5th speed rpm : 980
Rack travel in m: 14.80...15.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 630
Rack travel in m: 11.80...11.90

3rd pressure hPa : 340
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 500
Del.quantity cm3/ : 288.0...292.0
1000 s: (285.0...295.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 162.0...164.0
1000 s: (159.0...167.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 q 1
Edition : 28.02.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 840
Governor
Governor design. : RQ300/950PA971-7
Governor no. : 0 421 801 580

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 12.00
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.50...10.70
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 10.30...10.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 n1
 Edition : 14.02.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 949
 Injection pump
 Pump designation : PE6P120A320RS7230Z
 EP type number : 0 412 626 848
 Governor
 Governor design. : RQV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 295 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.20...14.20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 1030

travel mm : 9.60...10.00

4th speed rpm : 1145

travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.70
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1
Control Lever
position degrees: 67...75

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 320...360

TORQUE CONTROL
Dimension a mm : 1.80
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 12.20...12.30
2nd speed rpm : 550
Rack travel in m: 12.20...12.40
3rd speed rpm : 725
Rack travel in m: 12.60...12.80
4th speed rpm : 850
Rack travel in m: 13.20...13.40
5th speed rpm : 980
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 380
Rack travel in m: 10.80...10.90
3rd pressure hPa : 150
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 500
Del.quantity cm3/ : 263.0...267.0
1000 s: (260.0...270.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 968

Injection pump
Pump designation : PE6P120A320RS7248
EP type number : 0 412 626 861
Governor
Governor design. : RQV275...1150PA986
Governor no. : 0 421 813 920

Customer-spec. information
Customer : DAF

Engine : RS 222 L

1st version kW : 222.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 11.70...12.70
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 11.7...12.7
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 18.4...18.6
100 s: (18.1...18.9)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del. quantity cm³/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.20...1.60
2nd speed rpm : 315
travel mm : 1.80...2.20
3rd speed rpm : 1205
travel mm : 8.10...8.50
4th speed rpm : 1340
travel mm : 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1315
Rack travel in mm : 10.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 184.0...186.0
1000 : (181.0...189.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.20
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 79...87

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 315...365

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 420
Rack travel in m: 11.60...11.70
3rd pressure hPa : 240
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm³/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1180...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 28.02.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 969
 Injection pump
 Pump designation : PE6P120A320RS7248Z
 EP type number : 0 412 626 862
 Governor
 Governor design. : RQV275...1150PA986
 Governor no. : 0 421 813 920

Customer-spec. information
 Customer : DAF

Engine : RS 200 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Lube oil : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 11.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 10.8...11.8
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.60

2nd speed rpm : 315

travel mm : 1.80...2.20

3rd speed rpm : 1205

travel mm : 8.10...8.50

4th speed rpm : 1340

travel mm : 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1335

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 79...87

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 315...365

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 340
Rack travel in m: 10.70...10.80
3rd pressure hPa : 200
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm3/ : 115.0...117.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1190...1200

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 970

Injection pump
Pump designation : PE6P120A320RS7248Y
EP type number : 0 412 626 863
Governor
Governor design. : RQV275...1150PA986
Governor no. : 0 421 813 920

Customer-spec. information
Customer : DAF

Engine : RS 180 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 10.00...11.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 10.2...11.2
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 10.70...10.80
Del.quantity cm3/		: 14.5...14.7
	100 s:	(14.2...15.0)
Spread	cm3	: 0.5
	100 s:	(0.9)
2nd speed	rpm	: 275.0
Rack travel in mm		: 5.3...5.5
Del.quantity cm3/		: 1.3...1.9
	100 s:	(1.0...2.2)
Spread	cm3	: 0.8
	100 s:	(1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 275
travel mm		: 1.20...1.60
2nd speed	rpm	: 315
travel mm		: 1.80...2.20
3rd speed	rpm	: 1205
travel mm		: 8.10...8.50
4th speed	rpm	: 1340
travel mm		: 9.70...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1330
Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000

Del.quantity : 145.5...147.5
1000 : (142.5...150.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.70
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 79...87

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 315...365

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 250
Rack travel in m: 10.20...10.30
3rd pressure hPa : 140
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1180...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 971
Injection pump
Pump designation : PE6P120A320RS7218Z
EP type number : 0 412 626 847
Governor
Governor design. : RQV250...1000PA939-2
Governor no. : 0 421 813 986

Customer-spec. information
Customer : DAF

Engine : WS 242 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 105
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 13.30...14.30

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.5...14.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
Rack travel in mm : 13.80...13.90
Del. quantity cm³/ : 20.5...20.7
100 s: (20.2...21.0)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.3...6.5
Del. quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.70...8.20
2nd speed rpm : 275
travel mm : 1.10...1.60
3rd speed rpm : 380
travel mm : 2.40...2.90
4th speed rpm : 675
travel mm : 4.20...4.70
5th speed rpm : 1310
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1075
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 205.0...207.0
1000 : (202.0...210.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 12.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 300...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 420
Rack travel in m: 13.30...13.40
3rd pressure hPa : 260
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 972
Injection pump
Pump designation : PE6P120A320RS7218
EP type number : 0 412 626 839
Governor
Governor design. : RQV250...1000PA939-2
Governor no. : 0 421 813 986

Customer-spec. information
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.30...15.30
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 6.3...6.5
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.70...8.20
2nd speed rpm : 275
travel mm : 1.10...1.60
3rd speed rpm : 380
travel mm : 2.40...2.90
4th speed rpm : 675
travel mm : 4.20...4.70
5th speed rpm : 1310
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1075
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...350

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.20...12.40
2nd pressure hPa : 490
Rack travel in m: 14.20...14.30
3rd pressure hPa : 280
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 158.0...160.0
1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 973
Injection pump
Pump designation : PE6P120A320RS7218Z
EP type number : 0 412 626 847
Governor
Governor design. : RQ250/1000PA936-2
Governor no. : 0 421 801 633

Customer-spec. information
Customer : DAF

Engine : WS 242 L
1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 105
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 13.30...14.30
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.5...14.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
Rack travel in mm : 13.80...13.90
Del.quantity cm3/ : 20.5...20.7
100 s: (20.2...21.0)
Spread cm3 : 0.5
100 s: (0.9)
2nd speed rpm : 275.0
Rack travel in mm : 6.3...6.5
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 550
Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 205.0...207.0
1000 : (202.0...210.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.00

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.80...14.90
2nd speed rpm : 1000
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 420
Rack travel in m: 13.30...13.40
3rd pressure hPa : 260
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm3/ : 147.0...149.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

;
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Note remarks

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 16.0

Testing:
1st rack travel in: 13.80
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in mm : 15.30...15.40
2nd speed rpm : 1000
Rack travel in mm : 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in mm : 12.20...12.40
2nd pressure hPa : 490
Rack travel in mm : 14.20...14.30
3rd pressure hPa : 280
Rack travel in mm : 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h : -
Speed rpm : 600

Del.quantity cm³/ : 158.0...160.0
1000 s: (155.0...163.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 987

Injection pump
Pump designation : PE6P120A32ORS7218Y
EP type number : 0 412 626 859
Governor
Governor design. : RQ250/1000PA936-2
Governor no. : 0 421 801 633

Customer-spec. information
Customer : DAF

Engine : WS 222 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 13.30...14.30

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.5...14.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 19.5...19.7

100 s: (19.2...20.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 195.0...197.0

1000 : (192.0...200.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.70...14.80
2nd speed rpm : 1000
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.50...11.70
2nd pressure hPa : 400
Rack travel in m: 13.20...13.30
3rd pressure hPa : 230
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 988

Injection pump
Pump designation : PE6P120A32ORS7230X
EP type number : 0 412 626 868
Governor
Governor design. : RQV250...1000PA990K
Governor no. : 0 421 815 274

Customer-spec. information
Customer : DAF

Engine : WS 295 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 13.50...14.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 25.8...26.0

100 s: (25.5...26.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 685

travel mm : 6.20...6.60

4th speed rpm : 1030

travel mm : 9.60...10.00

5th speed rpm : 1145

travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1195

Rack travel in mm : 11.60...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 258.0...260.0

1000 : (255.0...263.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 66...74

Testing:
1st rack travel in: 12.90
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 2.20
Torque control curve - 1st version
1st speed rpm : 400
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.30...12.40
3rd speed rpm : 825
Rack travel in m: 13.30...13.50
4th speed rpm : 980
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 830

E24

Rack travel in m: 12.60...12.70
3rd pressure hPa : 420
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del.quantity cm3/ : 255.0...259.0
1000 s: (252.0...262.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure n: -
Speed rpm : 600
Del.quantity cm3/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 21.02.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 989
 Injection pump
 Pump designation : PE6P120A32ORS7230Y
 EP type number : 0 412 626 867
 Governor
 Governor design. : RGV250...1000PA990K
 Governor no. : 0 421 815 274

Customer-spec. information
 Customer : DAF

Engine : WS 315 L

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.50...14.60

Del.quantity cm³/ : 27.3...27.5

100 s: (27.0...27.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.30...1.70

2nd speed rpm : 285
 travel mm : 2.10...2.50

3rd speed rpm : 685
 travel mm : 6.20...6.60

4th speed rpm : 1030
 travel mm : 9.60...10.00

5th speed rpm : 1145
 travel mm : 11.20...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 273.0...275.0

1000 : (270.0...278.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 66...74

Testing:
1st rack travel in: 13.50
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL
Dimension a mm : 2.20
Torque control curve - 1st version
1st speed rpm : 400
Rack travel in m: 12.60...12.70
2nd speed rpm : 600
Rack travel in m: 13.00...13.20
3rd speed rpm : 800
Rack travel in m: 14.00...14.20
4th speed rpm : 980
Rack travel in m: 14.80...15.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 980

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 760
Rack travel in m: 13.10...13.20
3rd pressure hPa : 350
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del.quantity cm3/ : 281.0...285.0
1000 s: (278.0...288.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 2
Edition : 14.02.92
Replaces : 08.91
Test oil : ISO-4113

Combination no. : 0 402 648 895

Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/1050PA972-1
Governor no. : 0 421 801 545

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.20...14.40
Del. quantity cm³/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm³ : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.8
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 10.80...11.10
2nd pressure hPa : 650
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.40 *

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 214.0...217.0
1000 s: (211.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 30.0...70.0
1000 s: (26.0...74.0)
Rack travel in mm : 10.10...10.50

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 670 809

Injection pump
Pump designation : PE12P120A320LS7807-2
EP type number : 0 412 620 812
Governor
Governor design. : RSV375...950POA535-5
Governor no. : 0 421 833 374

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 493.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.90...15.10

Del.quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 375.0
Rack travel in mm : 5.4...5.9
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.40

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 23...31

Testing:

1st rack travel in: 13.80
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 13.00
Speed rpm : 375
Rack travel in mm : 6.20...6.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 14.80...15.00
2nd speed rpm : 800
Rack travel in m: 15.70...15.90
3rd speed rpm : 925
Rack travel in m: 15.10...15.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.30...11.50
2nd pressure hPa : 500
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1000
Rack travel in m: 15.40...15.60
4th pressure hPa : -
Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

F02

1st version

Aneroid pressure h: 1250
Speed rpm : 1030
Del.quantity cm3/ : 225.0...228.0
1000 s: (222.0...231.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 800
Del.quantity cm3/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 122.0...124.0
1000 s: (119.0...127.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.40...5.90
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

On activation of the starting solenoid,
the start position must be reached.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 735 804
Injection pump
Pump designation : PES5P120A720/3LS7250
EP type number : 0 412 725 809
Governor
Governor design. : RQV325...1000PA962-5
K
Governor no. : 0 421 815 300

Customer-spec. information
Customer : MAN

Engine : D2865LF03/LU03

1st version kW : 235.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

F03

Prestroke mm : 4.80...4.90
(4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 26.6...26.8

100 s: (26.3...27.1)

Spread cm3 : 0.6

100 s: (-)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.3

Del.quantity cm3/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.70...8.90

2nd speed rpm : 325

travel mm : 1.90...2.10

3rd speed rpm : 520

travel mm : 4.20...4.60

4th speed rpm : 900

travel mm : 5.90...6.30

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650
Aneroid pressure h : 1200
Del.quantity : 266.0...268.0
1000 : (263.0...271.0)
Spread cm³ : 6.00

RATED SPEED

1st version

Control lever
position degrees: 285...293

Testing:

1st rack travel in: 11.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 240...248

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 325
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 12.70...12.80
2nd speed rpm : 900
Rack travel in m: 13.30...13.50
3rd speed rpm : 1000
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.20...13.50

Measurement

Speed 1/min : 900

F04

1st pressure hPa : -
Rack travel in m: 9.20...9.40

2nd pressure hPa : 170
Rack travel in m: 9.40...9.50

3rd pressure hPa : 600
Rack travel in m: 11.90...12.10

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm³/ : 261.0...265.0
1000 s: (258.0...268.0)
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 242.0...248.0
1000 s: (239.0...251.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.90...6.30
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7200

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 735 805
Injection pump
Pump designation : PES5P120A720/3LS7250
EP type number : 0 412 725 809
Governor
Governor design. : RQV325...1000PA962-6
K
Governor no. : 0 421 815 301

Customer-spec. information
Customer : MAN

Engine : D2865LF06/LUC6

1st version kW : 235.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
(4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.3

Del.quantity cm3/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.70...8.90

2nd speed rpm : 325

travel mm : 1.90...2.10

3rd speed rpm : 520

travel mm : 4.10...4.70

4th speed rpm : 810

travel mm : 5.80...6.20

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 10.80...13.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h : 1200
Del.quantity : 260.0...262.0
1000 : (257.0...265.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 285...293

Testing:

1st rack travel in: 12.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 240...248

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 325
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.10...13.30
3rd speed rpm : 650
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.90...12.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

F07

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 170

Rack travel in m: 9.60...9.70

3rd pressure hPa : 600

Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 248.0...254.0
1000 s: (245.0...257.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 270.0...276.0
1000 s: (267.0...279.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 159.0...161.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.90...6.30
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7202

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 2
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump
Pump designation : PES6P110A120RS7213
EP type number : 0 412 716 804
Governor
Governor design. : RQV400...1250PA964-3
K
Governor no. : 0 421 815 255

Customer-spec. information
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 147.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm³/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 1.60...1.80

2nd speed rpm : 600

travel mm : 2.80...3.30

3rd speed rpm : 1300

travel mm : 7.20...7.40

4th speed rpm : 1500

travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 158.5...160.5

1000 : (155.5...163.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1460...1490

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 275

Minimum rack travel: 7.20

Speed rpm : 400

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1250

Pressure hPa : 1200

Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 1250

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410

Rack travel in m: 10.00...10.10

3rd pressure hPa : 755

Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

F09

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800

Del.quantity cm³/ : 156.5...162.5

1000 s: (153.5...165.5)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.50...5.70

Del.quantity cm³/ : 32.0...38.0

1000 s: (30.0...40.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3918321

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 6
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 736 812

Injection pump
Pump designation : PES6P110A120RS7214
EP type number : 0 412 716 805
Governor
Governor design. : RQV350...1200PA964-4
K
Governor no. : 0 421 815 256

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 156.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 2.7...3.3
100 s: (2.5...3.5)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.80...2.00
2nd speed rpm : 450
travel mm : 3.10...3.50
3rd speed rpm : 700
travel mm : 5.90...6.30
4th speed rpm : 1200
travel mm : 9.00...9.20
5th speed rpm : 1400
travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 1200
Del.quantity : 147.5...149.5
1000 : (144.5...152.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.30
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1375...1405
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.30...12.40
2nd speed rpm : 650
Rack travel in m: 10.90...11.30
3rd speed rpm : 550
Rack travel in m: 10.80...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.50...7.90
2nd pressure hPa : 225
Rack travel in m: 8.90...9.00
3rd pressure hPa : 575
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 151.0...157.0
1000 s: (148.0...160.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 86.5...90.5
1000 s: (84.5...92.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3917088

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 1
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump
Pump designation : PES6P110A12ORS/214
EP type number : 0 412 716 805
Governor
Governor design. : RQV350...1200PA964-6
K
Governor no. : 0 421 815 258

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 14.50...14.60
Del.quantity cm3/ : 18.3...18.5
100 s: (18.0...18.8)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 2.7...3.3
100 s: (2.5...3.5)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.80...2.00
2nd speed rpm : 450
travel mm : 3.10...3.50
3rd speed rpm : 700
travel mm : 5.90...6.30
4th speed rpm : 1200
travel mm : 9.00...9.20
5th speed rpm : 1400
travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 1200
Del.quantity : 183.0...185.0
1000 : (180.0...188.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.50
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1405...1435
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 11.40...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.50...7.90
2nd pressure hPa : 320
Rack travel in m: 9.60...9.70
3rd pressure hPa : 860
Rack travel in m: 13.10...13.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 165.5...171.5
 1000 s: (162.5...174.5)
Spread cm³ : 8.00
 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 86.5...90.5
 1000 s: (84.5...92.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
 1000 s: (130.0...180.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...33.0
 1000 s: (25.0...35.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:
 : C.D.C. # 3917089

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 736 824
Injection pump
Pump designation : PES6P120A720/3LS7251
EP type number : 0 412 726 860
Governor
Governor design. : RQV300...1000PA962
-7K
Governor no. : 0 421 815 302

Customer-spec. information
Customer : MAN

Engine : D2866LF06
1st version kW : 309.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 28.5...28.7

100 s: (28.2...29.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 2.9...3.5

100 s: (2.6...3.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 9.10...9.30

2nd speed rpm : 300

travel mm : 3.70...3.90

3rd speed rpm : 450

travel mm : 4.20...4.60

4th speed rpm : 770

travel mm : 5.80...6.20

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 10.80...13.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 285.0...287.0
1000 : (282.0...290.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 287...295

Testing:

1st rack travel in: 12.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.50...11.70

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 220

Rack travel in m: 9.40...9.50

3rd pressure hPa : 720

Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 261.0...265.0
1000 s: (258.0...268.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 736 825
Injection pump
Pump designation : PES6P120A720/3LS7251
EP type number : 0 412 726 860
Governor
Governor design. : RQV300...1000PA962-8
K
Governor no. : 0 421 815 303

Customer-spec. information
Customer : MAN

Engine : D2866LF09

1st version kW : 309.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
& maximum rack tra: 15.0...16.0
Difference " CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 29.9...30.1

100 s: (29.6...30.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 2.9...3.5
100 s: (2.6...3.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
travel mm : 9.10...9.30

2nd speed rpm : 300
travel mm : 3.60...4.00

3rd speed rpm : 450
travel mm : 4.10...4.70

4th speed rpm : 770
travel mm : 5.80...6.20

5th speed rpm : 1350
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 11.10...13.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h : 1200
Del. quantity : 299.0...301.0
1000 : (296.0...304.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 287...295

Testing:

1st rack travel in: 12.40
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 1000
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 12.90...13.10
4th speed rpm : 400
Rack travel in m: 12.00...12.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 220

Rack travel in m: 9.40...9.50

3rd pressure hPa : 720

Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del. quantity cm³/ : 281.0...287.0
1000 s: (278.0...290.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.60
Del. quantity cm³/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7206

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 736 826

Injection pump
Pump designation : PES6P120A720/3LS7251
EP type number : 0 412 726 860
Governor
Governor design. : RQV300...1000PA962
-9K
Governor no. : 0 421 815 304

Customer-spec. information
Customer : MAN

Engine : D2866LU04

1st version kW : 309.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
& maximum rack tra: 15.0...16.0
Difference ° CS : 1.75...0.00

BASIC SETTING

1st speed rpm : 750
Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 29.1...29.3
100 s: (28.8...29.6)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.7...5.1
Del.quantity cm3/ : 2.9...3.5
100 s: (2.6...3.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
travel mm : 9.10...9.30
2nd speed rpm : 300
travel mm : 3.70...3.90
3rd speed rpm : 450
travel mm : 4.20...4.60
4th speed rpm : 770
travel mm : 5.80...6.20
5th speed rpm : 1350
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110

Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
Aneroid pressure h: 1200
Del.quantity : 291.0...293.0
1000 : (288.0...296.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 287...295

Testing:

1st rack travel in: 12.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 240...360

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 12.70...12.80
2nd speed rpm : 900
Rack travel in m: 13.10...13.30
3rd speed rpm : 1000
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.00...13.20

Measurement

F21

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 200

Rack travel in m: 8.70...8.80

3rd pressure hPa : 660

Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm3/ : 290.0...296.0
1000 s: (287.0...299.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 169.0...171.0
1000 s: (166.0...174.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...5.10
Del.quantity cm3/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7208

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 b
Edition : 21.02.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 402 746 809

Injection pump
Pump designation : PES6P120A720RS7132
EP type number : 412 726 806
Governor
Governor design. : RQ750PA836
Governor no. : 0 421 801 373

Customer-spec. information
Customer : PERKINS

Engine : EAGLE LE

1st version kW : 240.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.90...16.00

Del. quantity cm³/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 3.8...4.4

100 s: (3.5...4.7)

Spread cm³ : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 339.0...341.0

1000 : (336.0...344.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 14.90

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 783...798

4th rack travel in: 820

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.90

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 210.0...240.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 d
Edition : 14.02.92
Replaces : 07.90
Test oil : ISO-4113

Combination no. : 0 402 746 835

Injection pump
Pump designation : PES6P120A320RS7156
EP type number : 0 412 726 813
Governor
Governor design. : RQV250...1050PA793-2
Governor no. : 0 421 813 699

Customer-spec. information
Customer : PERKINS

Engine : EAGLE TX 350/375

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.20...14.30

Del. quantity cm³/ : 27.7...27.9

100 s: (27.4...28.2)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.3...1.7

100 s: (1.0...2.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 2.90...3.50

3rd speed rpm : 700

travel mm : 4.00...4.60

4th speed rpm : 1000

travel mm : 7.40...7.60

5th speed rpm : 1100

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 277.0...279.0
1000 : (274.0...282.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.20
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 250...570

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in mm: 12.10...12.30
2nd pressure hPa : 850
Rack travel in mm: 13.80...13.90
3rd pressure hPa : 610
Rack travel in mm: 12.60...12.80

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

F25

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 222.0...224.0
1000 s: (219.0...227.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (187.0...233.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 15,9 b3
 Edition : 14.02.92
 Replaces : 07.90
 Test oil : ISO-4113
 Combination no. : 0 402 746 880
 Injection pump
 Pump designation : PES6P120A32ORS7105
 EP type number : 0 412 726 800
 Governor
 Governor design. : RQV350...900PA935-1
 Governor no. : 0 421 813 820

Customer-spec. information
 Customer : BAUDOUIN

Engine : 6P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 12.00...12.10
 Del.quantity cm3/ : 33.9...34.1
 100 s: (33.6...34.4)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.70...1.00
 2nd speed rpm : 500
 travel mm : 3.10...3.80
 3rd speed rpm : 800
 travel mm : 6.50...6.90
 4th speed rpm : 900
 travel mm : 7.80...8.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1010
 Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Del.quantity : 339.0...341.0
 1000 : (336.0...344.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 100
Minimum rack trave: 6.20
Speed rpm : 350
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 s 2
Edition : 14.02.92
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 402 746 906

Injection pump
Pump designation : PES6P120A720LS7196
EP type number : 0 412 726 831
Governor
Governor design. : RQV450...1050PA985
Governor no. : 0 421 813 917

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h LA

1st version kW : 304.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/ : 28.4...28.6
100 s: (28.1...28.9)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 450.0
Rack travel in mm : 4.0...4.6
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 450
travel mm : 1.10...1.60
2nd speed rpm : 650
travel mm : 3.50...4.00
3rd speed rpm : 940
travel mm : 5.50...6.00
4th speed rpm : 1107
travel mm : 7.30...7.80
5th speed rpm : 1226
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 950
Del.quantity : 284.0...286.0
1000 : (281.0...289.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 300
Minimum rack travel: 5.90
Speed rpm : 450
Rack travel in mm : 4.00...4.60

CONSTANT REGULATION

Speed rpm : 450...600

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 15.40...15.60
3rd speed rpm : 900
Rack travel in m: 15.70...15.90
4th speed rpm : 800
Rack travel in m: 16.00...16.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 950
Rack travel mm : 15.2...15.4

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.3...11.5
2nd pressure hPa : 600

G01

Rack travel in m: 13.6...13.8
3rd pressure hPa : 1200
Rack travel in m: 15.5...15.8
4th pressure hPa : -
Rack travel in m: 9.8...10.2

START CUT-OUT

Speed 1/min : 370 (390)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 280.0...283.0
1000 s: (277.0...286.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 298.0...302.0
1000 s: (295.0...305.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 280.0...300.0
1000 s: (276.0...304.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 u
Edition : 21.02.92
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 402 746 913

Injection pump
Pump designation : PES6P120A720LS7237
EP type number : 0 412 726 851
Governor
Governor design. : RQ300/1100PA1008-1
Governor no. : 0 421 801 592

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.5...7.1
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del.quantity : 161.0...163.0
1000 : (158.0...166.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 500
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.70...11.90
2nd pressure hPa : 700
Rack travel in m: 12.10...12.30 *
3rd pressure hPa : 1100
Rack travel in m: 12.80...13.00
4th pressure hPa : -
Rack travel in m: 11.70...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 193.0...196.0
1000 s: (190.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...80.0
1000 s: (56.0...84.0)
Rack travel in mm : 11.70...12.10

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 u 1
Edition : 21.02.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump
Pump designation : PES6P120A720LS7237
EP type number : 0 412 726 851
Governor
Governor design. : RQ300/1100PA1010
Governor no. : 0 421 801 596

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.80...6.40
Rack travel in mm : 2.00
Speed rpm : 390...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 500
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.70...11.90
2nd pressure hPa : 700
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1100
Rack travel in m: 12.80...13.00
4th pressure hPa : -
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 193.0...196.0
1000 s: (190.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800

Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 t 2
 Edition : 14.02.92
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 402 746 918
 Injection pump
 Pump designation : PES6P120A720LS7238
 EP type number : 0 412 726 852
 Governor
 Governor design. : RQ300/1100PA1013
 Governor no. : 0 421 801 599

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.00...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 12.20...12.40
2nd pressure hPa : 400
Rack travel in m: 13.60...13.80
3rd pressure hPa : 800
Rack travel in m: 14.20...14.40
4th pressure hPa : -
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 229.0...232.0
1000 s: (226.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 700

Del.quantity cm3/ : 233.0...237.0
1000 s: (230.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 148.0...150.0
1000 s: (145.0...153.0)
Spread cm3 : -
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 15,9 d
Edition : 14.02.92
Replaces : 09.91
Test oil : ISO-4113
Combination no. : 0 402 746 920
Injection pump
Pump designation : PES6P120A32ORS7241
EP type number : 0 412 726 854
Governor
Governor design. : RQV350...900PA935-1
Governor no. : 0 421 813 820

Customer-spec. information
Customer : BAUDOUIN

Engine : 6P15 2E

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

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Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.7...5.1

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 945

travel mm : 8.40...8.60

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed rpm : 550

travel mm : 3.60...4.20

4th speed rpm : 750

travel mm : 5.90...6.30

5th speed rpm : 1200

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 339.0...341.0

1000 : (336.0...344.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 119...127

Testing:

1st rack travel in: 11.00

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1000...1030

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 83...91

Testing:

Speed rpm : 100

Minimum rack travel: 6.40

Speed rpm : 350

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 u 3
 Edition : 21.02.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 402 746 923
 Injection pump
 Pump designation : PES6P120A720LS7237
 EP type number : 0 412 726 851
 Governor
 Governor design. : RG300/1100PA1013-2
 Governor no. : 0 421 801 611

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm³/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 500
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.70...11.90
2nd pressure hPa : 700
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1100
Rack travel in m: 12.80...13.00
4th pressure hPa : -
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 193.0...196.0
1000 s: (190.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800

Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 926

Injection pump
Pump designation : PES6P120A720RS7224
EP type number : 0 412 726 840
Governor
Governor design. : RQ275/1050PA1021
Governor no. : 0 421 801 623

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.721

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 33...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.80

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.80...10.90
2nd speed rpm : 550
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 430
Rack travel in m: 9.90...10.00
3rd pressure hPa : 250
Rack travel in m: 8.20...8.40

START CUT-OUT

Speed 1/min : 215 (235)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm3/ : 218.0...224.0
1000 s: (215.0...227.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...160.0
1000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 927

Injection pump
Pump designation : PES6P120A720RS7224
EP type number : 0 412 726 840
Governor
Governor design. : RQ275/1050PA1021-1
Governor no. : 0 421 801 624

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.731

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.70...12.80
Del.quantity cm3/ : 22.2...22.4
100 s: (21.9...22.7)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 4.8...5.2
Del.quantity cm3/ : 2.0...2.6
100 s: (1.7...2.9)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1200
Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1190...1220

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 550
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 7.50...7.70
2nd pressure hPa : 580
Rack travel in m: 11.30...11.40
3rd pressure hPa : 290
Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 215 (235)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 550
Del.quantity cm3/ : 266.0...274.0
1000 s: (263.0...277.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...160.0
1000 s: (126.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC
 Edition : 14.02.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 930
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA909-5K
 Governor no. : 0 421 815 305

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EN7-390

1st version kW : 291.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.70...15.80

Del.quantity cm³/ : 27.1...27.3

100 s: (26.8...27.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 5.1...5.3
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 650
 travel mm : 5.60...5.80
 4th speed rpm : 900
 travel mm : 8.30...8.50
 5th speed rpm : 1100
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200
 Del.quantity : 271.5...273.5
 1000 : (268.5...276.5)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 14.70

Speed rpm : 940...970

2nd rack travel in: 4.00

Speed rpm : 1130...1140

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rpm : 275

Minimum rack travel: 6.30

Speed rpm : 325

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.70...15.80

2nd speed rpm : 625

Rack travel in m: 15.10...15.50

3rd speed rpm : 500

Rack travel in m: 0.00...13.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 900

Pressure hPa : 1200

Rack travel mm : 15.70...15.80

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 325

Rack travel in m: 10.20...10.30

3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 275 (285)

G17

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625

Del.quantity cm³/ : 300.0...306.0

1000 s: (297.0...309.0)

Spread cm³ : 8.00

1000 s: (12.0)

Speed rpm : 850

Del.quantity cm³/ : 159.0...161.0 *

1000 s: (136.5...157.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm³/ : 157.5...161.5

1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.70

Speed rpm : 940...970

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 190.0...230.0

1000 s: (180.0...240.0)

Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325

Rack travel in mm : 5.10...5.30

Del.quantity cm³/ : 40.0...46.0

1000 s: (38.0...48.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P34

Bow dimension:

Sliding-sleeve position = 37.0 mm

* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 931

Injection pump
Pump designation : PES6P120A320RS7236
EP type number : 0 412 726 848
Governor
Governor design. : RGV275...1000PA1001-
2
Governor no. : 0 421 813 989

Customer-spec. information
Customer : RVI

Engine : MIDR 063540 N/3

1st version kW : 283.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 18.00...21.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.2...13.3

Del.quantity cm3/ : 28.2...28.4

100 s: (27.9...28.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 2.7...3.1

100 s: (2.4...3.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1080

travel mm : 8.40...8.60

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 490

travel mm : 3.50...4.10

4th speed rpm : 775

travel mm : 5.90...6.30

5th speed rpm : 1450

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1165

Rack travel in mm : 11.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 282.0...284.0
1000 : (279.0...287.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 297...305

Testing:

1st rack travel in: 12.20
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 480
Rack travel in m: 12.30...12.40
3rd pressure hPa : 240
Rack travel in m: 10.10...10.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

G19

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 260.0...266.0
1000 s: (257.0...269.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 27.0...31.0
1000 s: (24.0...34.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 n
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 776 808

Injection pump
Pump designation : PES6P120A720RS7223
EP type number : 0 412 726 843
Governor
Governor design. : RSV400...1050POA547
Governor no. : 0 421 833 349

Customer-spec. information
Customer : JOHN DEERE

Engine : 6101 HZ010

1st version kW : 241.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 075

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 140...150

Test nozzle holder
assembly : 1 688 901 103

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 22.4...22.6
100 s: (22.1...22.9)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 6.0...6.2
Del.quantity cm³/ : 2.1...2.7
100 s: (1.9...2.9)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1200
Del.quantity : 224.5...226.5
1000 : (221.5...229.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1165
3rd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 850
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 290
Rack travel in m: 11.30...11.40
3rd pressure hPa : 620
Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 850

Del.quantity cm³/ : 238.0...244.0
1000 s: (235.0...247.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...149.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...125.0
1000 s: (80.0...130.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 21.5...27.5
1000 s: (19.5...29.5)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 f
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 846 050

Injection pump
Pump designation : PE6P110A320RS8009
EP type number : 0 412 816 010
Governor
Governor design. : RQV250...1200PA953K
Governor no. : 0 421 815 996

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD73EB

1st version kW : 187.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 064

Inlet press., bar : 2.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.7...5.1
Del.quantity cm3/ : 2.1...2.5
100 s: (1.8...2.8)
Spread cm3 : 0.7
100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.50
2nd speed rpm : 400
travel mm : 3.00...3.60
3rd speed rpm : 850
travel mm : 6.70...7.30
4th speed rpm : 1250
travel mm : 10.30...10.50
5th speed rpm : 1350
travel mm : 11.40...11.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1240
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200

Del.quantity : 196.0...198.0
1000 : (194.0...200.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.30
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 12.10...12.20
2nd speed rpm : 1200
Rack travel in m: 12.30...12.50
3rd speed rpm : 850
Rack travel in m: 12.20...12.50
4th speed rpm : 350
Rack travel in m: 10.60...10.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 12.30...12.50

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.30...7.50
2nd pressure hPa : 90

Rack travel in m: 7.50...7.60
3rd pressure hPa : 870
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 165.0...169.0
1000 s: (162.0...172.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 99.0...101.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1260...1270

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 f 1
Edition : 14.02.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 402 846 051

Injection pump
Pump designation : PE6P110A32GRS8009
EP type number : 0 412 816 010
Governor
Governor design. : RQV250...1200PA953
-1K
Governor no. : 0 421 815 995

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD73EA

1st version kW : 160.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 064

Inlet press., bar : 2.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 15.9...16.1
100 s: (15.7...16.3)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.7...5.1
Del.quantity cm3/ : 2.1...2.5
100 s: (1.8...2.8)
Spread cm3 : 0.7
100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.50
2nd speed rpm : 400
travel mm : 3.00...3.60
3rd speed rpm : 850
travel mm : 6.70...7.30
4th speed rpm : 1250
travel mm : 10.30...10.50
5th speed rpm : 1350
travel mm : 11.40...11.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1240
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700

Aneroid pressure h: 1200
Del. quantity : 159.0...161.0
1000 : (157.0...163.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 10.10
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 14.50
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 10.20...10.30
2nd speed rpm : 1200
Rack travel in m: 11.10...11.30
3rd speed rpm : 1100
Rack travel in m: 11.00...11.30
4th speed rpm : 350
Rack travel in m: 9.40...9.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 11.10...11.30

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.30...7.50

G25

2nd pressure hPa : 90
Rack travel in m: 7.50...7.60
3rd pressure hPa : 670
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del. quantity cm3/ : 146.0...150.0
1000 s: (143.0...153.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm3/ : 99.0...101.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1260...1270

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6,11
 Edition : 21.02.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 403 246 031
 Injection pump
 Pump designation : PES6MW100/720RS1515
 EP type number : 0 413 206 013
 Governor
 Governor design. : RQV300...1300MW125-1
 Governor no. : 0 420 083 258

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 127.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness : 8.00X2.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 11.30

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.70...9.80

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 500
Rack travel in m: 12.00...12.20
3rd pressure hPa : 1000
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 103.5...106.5
1000 s: (101.0...109.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 43.0...45.0
1000 s: (41.0...47.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 I 1
Edition : 28.02.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 403 246 032

Injection pump
Pump designation : PES6MW100/72ORS1515
EP type number : 0 413 206 013
Governor
Governor design. : RGV300...1300MW125-2
Governor no. : 0 420 083 259

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 142.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.30

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1420...1450

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:
Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.90...9.00

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 500
Rack travel in m: 11.90...12.10
3rd pressure hPa : 1100
Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm3/ : 103.5...106.5
1000 s: (101.0...109.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 246 033
Injection pump
Pump designation : PES6MW100/72ORS1511
EP type number : 0 413 206 011
Governor
Governor design. : RQV300...1300MW125
Governor no. : 0 420 083 257

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1100

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.60

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:
Speed rpm : 200
Minimum rack trave: 6.00
Speed rpm : 300
Rack travel in mm : 4.10...4.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.10...7.20

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 8.80...9.00
2nd pressure hPa : 500
Rack travel in m: 10.10...10.30
3rd pressure hPa : 1100
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm3/ : 111.5...114.5
1000 s: (109.0...117.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 256 005
Injection pump
Pump designation : PES6MW100/321RS1516
EP type number : 0 413 206 014
Governor
Governor design. : RQ250/1200MW84-9
Governor no. : 0 420 082 064

Customer-spec. information
Customer : MAN

Engine : D 0826 LF08

1st version kW : 169.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

H04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 600

Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.30

Speed rpm : 1245...1260

2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...420

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 600
Rack travel in m: 12.70...12.90
3rd speed rpm : 800
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.70
2nd pressure hPa : 600
Rack travel in m: 11.60...11.90
3rd pressure hPa : 1000
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 149.0...152.0
1000 s: (146.5...154.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 81.0...83.0
1000 s: (79.0...85.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7194

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 256 006
Injection pump
Pump designation : PES6MW100/321RS1516
EP type number : 0 413 206 014
Governor
Governor design. : RQV250...1200MW83-2
Governor no. : 0 420 083 216

Customer-spec. information
Customer : MAN

Engine : D 0826 LFO8

1st version kW : 169.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 10.50...10.60

2nd speed rpm : 810

travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 3.70...4.30

4th speed rpm : 250

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing:

1st rack travel in: 11.50
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...420

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 600
Rack travel in m: 12.70...12.90
3rd speed rpm : 800
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.70
2nd pressure hPa : 600
Rack travel in m: 11.60...11.90
3rd pressure hPa : 1000
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

H07

Speed rpm : 600
Del.quantity cm3/ : 149.0...152.0
1000 s: (146.5...154.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 81.0...83.0
1000 s: (79.0...85.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #7-7195

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 3
Edition : 21.02.92
Replaces : 04.90
Test oil : ISO-4113

Combination no. : 0 403 436 104

Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RQV350...1200MW82-1
Governor no. : 0 420 083 153

Customer-spec. information
Customer : CUMMINS

Engine : 6 CTA-830

1st version kW : 179.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25
: (3.10...3.30)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.60...7.80

2nd speed rpm : 1350

travel mm : 8.60...9.00

3rd speed rpm : 350

travel mm : 1.20...1.60

4th speed rpm : 800

travel mm : 4.90...5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.40
Speed rpm : 1250...1260
2nd rack travel in: 4.00
Speed rpm : 1375...1405
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.5

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 12.40...12.50
2nd speed rpm : 750
Rack travel in m: 12.70...12.80
3rd speed rpm : 1000
Rack travel in m: 12.40...12.60
4th speed rpm : 900
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : 390
Rack travel in m: 11.60...11.70
2nd pressure hPa : 500
Rack travel in m: 12.40...12.70
3rd pressure hPa : 700
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

H09

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 143.0...146.0
1000 s: (140.5...148.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 112.0...114.0
1000 s: (110.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (207.0...233.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.40...7.60
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D16
Edition : 21.02.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 403 436 104FB

Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RQV350...1200MW82-1
Governor no. : 0 420 083 153

Cust. part no. : 3281356

Customer-spec. information
Customer : CUMMINS

Engine : 6 CTAA 8.3

1st version kW : 179.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

H10

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25
: (3.10...3.30)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 12.30...12.40
Del.quantity cm³/ : 13.6...13.8
100 s : (13.4...14.0)
Spread cm³ : 0.3
100 s : (0.6)
2nd speed rpm : 350.0
Rack travel in mm : 7.6...7.8
Del.quantity cm³/ : 1.4...1.8
100 s : (1.1...2.0)
Spread cm³ : 0.3
100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
travel mm : 7.60...7.80
2nd speed rpm : 1350
travel mm : 8.60...9.00
3rd speed rpm : 350
travel mm : 1.20...1.60
4th speed rpm : 800
travel mm : 4.90...5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h : 1000
Del.quantity : 136.0...138.0
1000 : (134.0...140.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 90...100

Testing:

1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.7

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.30...12.40
2nd speed rpm : 700
Rack travel in m: 13.10...13.30
3rd speed rpm : 500
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 12.40...12.50
2nd pressure hPa : 650
Rack travel in m: 12.80...13.10
3rd pressure hPa : 1000
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 146.0...149.0
1000 s: (143.5...151.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...127.0
1000 s: (123.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (207.0...233.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.60...7.80
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

Note remarks

Combination no. : 0 403 ~~444~~ 119

Engine : 110 TI

TEST BENCH REQUIREMENTS

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

```
Prestroke mm      : 3.30...3.40
                   : (3.25...3.45)
Rack travel in mm  : 12.00...14.00
Firing order       : 1- 5- 3- 6- 2- 4
```

Phasing : 0-60-120-180-240-300

Tolerance \pm ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)

Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

```
1st speed rpm : 1350
travel mm : 10.00...10.40
2nd speed rpm : 900
travel mm : 6.40...6.60
3rd speed rpm : 480
travel mm : 3.10...3.70
4th speed rpm : 300
travel mm : 1.40...1.80
```

GUIDE SLEEVE POSITION

```
Control-lever position
Degree: -1
Speed      rpm : 1380
Rack travel in mm : 15.20...17.80
```

FULL LOAD DELIV. AT FULL LOAD STOP

```
1st version
Speed          rpm : 1300
Aneroid pressure h: 900
Del.quantity   : 124.0...126.0
               1000 : (122.0...128.0)
```

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 13.00...13.10
2nd speed rpm : 800
Rack travel in m: 12.00...12.20
3rd speed rpm : 500
Rack travel in m: 10.10...10.30
4th speed rpm : 1000
Rack travel in m: 12.40...12.70
5th speed rpm : 400
Rack travel in m: 9.70...9.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.80

Measurement

Speed 1/min : 500

1st pressure hPa : 130

H13

Rack travel in m: 9.00...9.10
2nd pressure hPa : 180
Rack travel in m: 9.70...10.00
3rd pressure hPa : 900
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 240 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 118.0...121.0
1000 s: (115.5...123.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...100.0
1000 s: (87.0...103.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°
before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 444 135

Injection pump
Pump designation : PES4MW100/320RS1223
EP type number : 0 413 404 119
Governor
Governor design. : RGV300...1100MW122-1
K
Governor no. : 0 420 083 990

Customer-spec. information
Customer : VME

Engine : TD45E
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 173...176

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
travel mm : 10.00...10.40

2nd speed rpm : 800
travel mm : 6.10...6.30

3rd speed rpm : 500
travel mm : 3.40...4.00

4th speed rpm : 300
travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Aneroid pressure h: 750
Del.quantity : 128.0...130.0
1000 : (126.0...132.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.70
Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 880
Rack travel in m: 15.00...15.10
3rd speed rpm : 550
Rack travel in m: 14.20...14.30
4th speed rpm : 750
Rack travel in m: 14.70...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 550

1st pressure hPa : 220
Rack travel in m: 13.10...13.20
2nd pressure hPa : 370
Rack travel in m: 13.60...13.90
3rd pressure hPa : 750
Rack travel in m: 14.20...14.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 880

Del.quantity cm3/ : 135.5...138.5
1000 s: (133.0...141.0)
Spread cm3 : 5.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 86.0...88.0
1000 s: (84.0...90.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...155.0
1000 s: (142.0...158.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 28.0...32.0
1000 s: (25.5...34.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 444 137
Injection pump
Pump designation : PES4MW100/720RS1212
EP type number : 0 413 404 114
Governor
Governor design. : RQV300...1300MW50-23
Governor no. : 0 420 083 269

Customer-spec. information
Customer : MB-NFZ

Engine : OM364LA

1st version kW : 102.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 12.20
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 12.60...12.80
3rd pressure hPa : 700
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

H17

Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...95.0
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 444 138
Injection pump
Pump designation : PES4MW100/72ORS1151
EP type number : 0 413 404 104
Governor
Governor design. : RQV300...1300MW50-27
Governor no. : 0 420 083 273

Customer-spec. information
Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness : 8.00X2.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.80
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.80...10.90
2nd speed rpm : 600
Rack travel in m: 11.60...11.70
3rd speed rpm : 1000
Rack travel in m: 11.60...11.70
4th speed rpm : 1175
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.70...9.80

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.70...10.90
2nd pressure hPa : 300
Rack travel in m: 11.20...11.40
3rd pressure hPa : 700
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 220 (240)

H19

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 75.0...78.0
1000 s: (72.5...80.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 2
 Edition : 21.02.92
 Replaces : 08.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 220
 Injection pump
 Pump designation : PES6MW100/320RS1171
 EP type number : 0 413 406 156
 Governor
 Governor design. : RGV300...1400MW80-3
 Governor no. : 0 420 083 183

Customer-spec. information
 Customer : RVI

Engine : MIDR 06.02.120

1st version kW : 134.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 173...176

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

H20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.10...5.50

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1590

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 10.10

Speed rpm : 1470...1480
2nd rack travel in: 4.00
Speed rpm : 1590...1620
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.10...5.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 200
Rack travel in m: 10.40...10.50
3rd pressure hPa : 100
Rack travel in m: 8.80...9.10

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 900
Del.quantity cm3/ : 87.5...90.5
1000 s: (85.0...93.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 40.0...42.0
1000 s: (38.0...44.0)

BREAKAWAY

H21

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1470...1480

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 95.0...115.0
1000 s: (92.0...118.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.10...5.50
Del.quantity cm3/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 10,0 S
Edition : 14.02.92
Replaces : 04.91
Test oil : ISO-4113

Combination no. : 0 403 446 250

Injection pump
Pump designation : PES6MW100/320RS1194
EP type number : 0 413 406 186
Governor
Governor design. : RQV300...1300MW108K
Governor no. : 0 420 083 998

Customer spec. information
Customer : PERKINS

Engine : 180 TI

1st version kW : 134.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40
: (3.25...3.45)
Rack travel in mm : 12.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 13.4...13.6

100 s: (13.2...13.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 10.00...10.40

2nd speed rpm : 900
travel mm : 6.40...6.60

3rd speed rpm : 480
travel mm : 3.10...3.70

4th speed rpm : 300
travel mm : 1.40...1.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 134.0...136.0

1000 : (132.0...138.0)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.30
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1480...1510
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 14.30...14.40
2nd speed rpm : 800
Rack travel in m: 13.10...13.30
3rd speed rpm : 500
Rack travel in m: 11.70...11.90
4th speed rpm : 1000
Rack travel in m: 13.60...13.90
5th speed rpm : 700
Rack travel in m: 12.60...12.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : 180

H23

Rack travel in m: 10.40...10.50
2nd pressure hPa : 220
Rack travel in m: 10.90...11.20
3rd pressure hPa : 900
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 240 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 126.0...129.0
1000 s: (123.5...131.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...100.0
1000 s: (87.0...103.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°
before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6,101
Edition : 28.02.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 403 446 274

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQ300/1300MW105-3
Governor no. : 0 420 082 050

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.75)
Rack travel in mm : 9.00...12.00

H24

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.80...9.20

2nd speed rpm : 1300

travel mm : 7.50...7.70

3rd speed rpm : 500

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:
Speed rpm : 1200
Rack travel in mm : 15.5

Testing:
1st rack travel in: 9.90
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 510...550

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.60...11.70
3rd speed rpm : 1100
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...9.90
2nd pressure hPa : 400
Rack travel in m: 11.10...11.40
3rd pressure hPa : 700
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 J
Edition : 28.02.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 446 285

Injection pump
Pump designation : PES6MW100/320RS1214
EP type number : 0 413 406 204
Governor
Governor design. : RQV275...1250MW115K
Governor no. : 0 420 083 994

Customer-spec. information
Customer : RVI

Engine : MIDR 060226 W

1st version kW : 151.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 16.50...19.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.00...6.20

Del. quantity cm³/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1330
travel mm : 9.80...10.20

2nd speed rpm : 950
travel mm : 6.90...7.10

3rd speed rpm : 550
travel mm : 3.60...4.20

4th speed rpm : 275
travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del. quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 294...302

Testing:

1st rack travel in: 13.00

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1465...1495

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 240...248

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.9

Testing:

Speed rpm : 200

Minimum rack travel: 6.70

Speed rpm : 275

Rack travel in mm : 6.00 ..6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.00...14.10

2nd speed rpm : 700

Rack travel in m: 13.05...13.15

3rd speed rpm : 1000

Rack travel in m: 13.40...13.60

4th speed rpm : 500

Rack travel in m: 12.70...12.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 320

Rack travel in m: 12.20...12.30

3rd pressure hPa : 200

Rack travel in m: 11.30...11.60

START CUT-OUT

H27

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 700

Del.quantity cm3/ : 108.5...111.5

1000 s: (106.0...114.0)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 71.0...73.0

1000 s: (69.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 90.0...110.0

1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 6.00...6.20

Del.quantity cm3/ : 21.0...25.0

1000 s: (18.5...27.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 K
Edition : 21.02.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 446 286

Injection pump
Pump designation : PES6MW100/32ORS1216
EP type number : 0 413 406 206
Governor
Governor design. : RQV350...1175MW113-2
Governor no. : 0 420 083 248

Customer-spec. information
Customer : RVI

Engine : MIDR 060226 X

1st version kW : 166.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 11.50...14.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.90...6.30

Del.quantity cm3/ : 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 7.80...8.20

2nd speed rpm : 1220
travel mm : 6.80...7.00

3rd speed rpm : 600
travel mm : 3.20...3.80

4th speed rpm : 350
travel mm : 0.70...1.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1460

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000

Del.quantity : 117.0...119.0

1000 : (115.0...121.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 294...302

Testing:

1st rack travel in: 13.80

Speed rpm : 1250...1260

2nd rack travel in: 4.00

Speed rpm : 1460...1490

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 244...252

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.7

Testing:

Speed rpm : 200

Minimum rack travel: 6.90

Speed rpm : 275

Rack travel in mm : 5.90...6.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...10.00

2nd pressure hPa : 600

Rack travel in m: 13.30...13.40

3rd pressure hPa : 240

Rack travel in m: 13.10...13.40

START CUT-OUT

Speed 1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 700

Del.quantity cm3/ : 123.0...127.0

1000 s: (121.0...129.0)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 62.0...64.0

1000 s: (60.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 88.0...102.0

1000 s: (85.0...105.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.90...6.30

Del.quantity cm3/ : 28.0...32.0

1000 s: (25.5...34.5)

Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 K 1
Edition : 14.02.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 403 446 293

Injection pump
Pump designation : PES6MW100/320RS1216
EP type number : 0 413 406 206
Governor
Governor design. : RQV275...1250MW124K
Governor no. : 0 420 083 989

Customer-spec. information
Customer : RVI

Engine : MIDR 060226 U

1st version kW : 110.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 11.50...14.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.80...6.20

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1330
travel mm : 9.80...10.20

2nd speed rpm : 925
travel mm : 6.60...6.80

3rd speed rpm : 550
travel mm : 3.60...4.20

4th speed rpm : 275
travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 12.00

Speed rpm : 1320...1340

2nd rack travel in: 4.00

Speed rpm : 1460...1500

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 58...66

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.0

Testing:

Speed rpm : 100

Minimum rack travel: 6.50

Speed rpm : 275

Rack travel in mm : 5.80...6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 13.00...13.10

2nd speed rpm : 700

Rack travel in m: 11.60...11.70

3rd speed rpm : 1000

Rack travel in m: 12.30...12.50

4th speed rpm : 500

Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm³/ : 86.5...89.5

1000 s: (84.0...92.0)

Spread cm³ : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1320...1340

J03

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 88.0...112.0

1000 s: (85.0...115.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.80...6.20

Del.quantity cm³/ : 20.0...24.0

1000 s: (17.5...26.5)

Spread cm³ : 3.50

1000 s: (5.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 8
 Edition : 21.02.92
 Replaces : 01.92
 Test oil : ISO-4113
 Combination no. : 0 403 446 294
 Injection pump
 Pump designation : PES6MW100/72ORS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RQV350...1100MW67-4
 Governor no. : 0 420 083 261

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 162.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 7.80...8.30

2nd speed rpm : 880

travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:
1st rack travel in: 12.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:
Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.40...9.50

Measurement
Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 10.60...10.80
2nd pressure hPa : 600
Rack travel in m: 12.60...12.80
3rd pressure hPa : 1000
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 104.5...107.5
1000 s: (102.0...110.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 A 4
 Edition : 21.02.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 296
 Injection pump
 Pump designation : PES6MM100/32ORS1204
 EP type number : 0 413 406 192
 Governor
 Governor design. : RQV350...1350MM46-42
 Governor no. : 0 420 083 263

Customer spec. information
 Customer : NAVISTAR

Engine : DTA-360

1st version kW : 142.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.20...8.60

2nd speed rpm : 1350

travel mm : 7.40...7.60

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 109.5...111.5

1000 : (107.5...113.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 100...108

Testing:

1st rack travel in: 9.60
Speed rpm : 1415...1435
2nd rack travel in: 4.00
Speed rpm : 1510...1520
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.30...8.40

Measurement

Speed 1/min : 500

1st pressure hPa : 195
Rack travel in mm: 8.90...9.00
2nd pressure hPa : 345
Rack travel in mm: 9.90...10.30
3rd pressure hPa : 900
Rack travel in mm: 10.60...10.70

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1350
Del.quantity cm3/ : 105.0...109.0
1000 s: (103.0...111.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.5...64.5
1000 s: (60.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1415...1435

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1818797C91
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 A 5
 Edition : 14.02.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 297
 Injection pump
 Pump designation : PES6MW100/320RS1204
 EP type number : 0 413 406 192
 Governor
 Governor design. : RQV350...1350MW46-43
 Governor no. : 0 420 083 264

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-366

1st version kW : 127.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.20...8.60

2nd speed rpm : 1350

travel mm : 7.40...7.60

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 107.5...109.5

1000 : (105.5...111.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 100...108

Testing:

1st rack travel in: 9.50
Speed rpm : 1420...1440
2nd rack travel in: 4.00
Speed rpm : 1520...1530
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 350
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.20...8.30

Measurement

Speed 1/min : 500

1st pressure hPa : 180
Rack travel in m: 8.90...9.00
2nd pressure hPa : 330
Rack travel in m: 9.70...10.00
3rd pressure hPa : 900
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1350
Del.quantity cm³/ : 103.5...107.5
1000 s: (101.5...109.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 61.5...63.5
1000 s: (59.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1420...1440

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1819274091
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 302
Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RGV300...1300MW50-24
Governor no. : 0 420 083 270

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness : 8.00X2.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Setting point:
Speed rpm : 1350
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.30

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.60...11.70
3rd speed rpm : 1100
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...9.90

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.20...10.30
2nd pressure hPa : 400
Rack travel in m: 10.80...11.10
3rd pressure hPa : 700
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 303
Injection pump
Pump designation : PES6MW100/720RS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1300MW50-25
Governor no. : 0 420 083 271

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 9.8...10.0

100 s : (9.6...10.2)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.20...11.30
2nd pressure hPa : 350
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 87.0...91.0
1000 s: (85.0...93.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 304
Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RGV300...1200MW50-26
Governor no. : 0 420 083 272

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 089

Outside diameter
x Wall thickness : 8.00X2.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.40...7.80

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 9.20
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1335...1365
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.60...5.80

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve -- 1st version
1st speed rpm : 1200
Rack travel in m: 10.20...10.30
2nd speed rpm : 600
Rack travel in m: 10.90...11.10
3rd speed rpm : 1100
Rack travel in m: 10.30...10.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.60...8.70

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 8.90...9.00
2nd pressure hPa : 350
Rack travel in m: 10.20...10.50
3rd pressure hPa : 700
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del. quantity cm³/ : 78.0...81.0
1000 s: (75.5...83.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del. quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER
Edition : 17.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 295
Injection pump
Pump designation : PES8MW100/720RS1142
EP type number : 0 413 408 011
Governor
Governor design. : RQV500...1100MW77
Governor no. : 0 420 083 117

Customer spec. information
Customer : PERKINS

Engine : TV 8.640

1st version kW : 201.0
Rated speed : 2200
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 7- 5- 4- 3- 6- 2

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.30...14.40

Del. quantity cm3/ : 12.1...12.3

100 s: (11.9...12.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0
Rack travel in mm : 6.6...6.7
Del. quantity cm3/ : 0.9...1.3
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225
travel mm : 8.30...8.50
2nd speed rpm : 1250
travel mm : 9.50...9.90
3rd speed rpm : 500
travel mm : 1.30...1.70
4th speed rpm : 700
travel mm : 3.20...3.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1225
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 600
Del. quantity : 121.0...123.0
1000 : (119.0...125.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 13.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 500
Rack travel in mm : 6.60...6.70

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 12.20...12.50

Measurement
Speed 1/min : 500

1st pressure hPa : 390
Rack travel in m: 12.80...12.90
2nd pressure hPa : 520
Rack travel in m: 13.50...13.80
3rd pressure hPa : 700
Rack travel in m: 14.30...14.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.5...76.5
1000 s: (72.5...78.5)

BREAKAWAY

1st version

J17

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 500
Rack travel in mm : 6.60...6.70
Del.quantity cm3/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 T
Edition : 14.02.92
Replaces : 08.91
Test oil : ISO-4113

Combination no. : 0 403 466 126

Injection pump
Pump designation : PES6MW100/120RS1218
EP type number : 0 413 406 208
Governor
Governor design. : RSV400...1050MW7A319
-17
Governor no. : 0 420 085 174

Customer-spec. information
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 261.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25
(3.10...3.30)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 20.5...20.7

100 s: (20.3...20.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.7...2.1
100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 205.5...207.5

1000 : (203.5...209.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1125...1155
3rd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.10...6.30

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 17.5...21.5
1000 s: (15.0...24.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: CUM #3919723

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 B
Edition : 21.02.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 403 474 008

Injection pump
Pump designation : PES4MM100/720RS1181
EP type number : 0 413 404 107
Governor
Governor design. : RSV400...1000MW1A333
Governor no. : 0 420 085 118

Customer-spec. information
Customer : LIEBHERR

Engine : 914

1st version kW : 120.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 153.0...155.0

1000 : (151.0...157.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1175
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 12.20...12.30
5th speed rpm : 450
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 154.5...157.5
1000 s: (152.0...160.0)
Spread cm3 : 3.50
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 H 7
Edition : 21.02.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 403 474 019

Injection pump
Pump designation : PES4M100/720RS1151
EP type number : 0 413 404 104
Governor
Governor design. : RSV350...1200MWA346
-3
Governor no. : 0 420 085 179

Customer-spec. information
Customer : MB-NFZ

Engine : OM 364 A

1st version kW : 77.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 104...112

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50
Speed rpm : 1240...1245 *
2nd rack travel in: 4.00
Speed rpm : 1285...1298
3rd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 10.50

LOW IDLE 1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.50...11.60
2nd speed rpm : 600
Rack travel in m: 12.30...12.50
3rd speed rpm : 1000
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...9.90

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.40...10.50
2nd pressure hPa : 375
Rack travel in m: 11.50...11.80
3rd pressure hPa : 700
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 83.5...86.5
1000 s: (81.0...89.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 75.0...85.0
1000 s: (72.0...88.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.80
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

* Read off speed set under 1.
Add 45...53 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 474 022
Injection pump
Pump designation : PES4MM100/720RS1151
EP type number : 0 413 404 104
Governor
Governor design. : RSV350...1300MWA329
-12
Governor no. : 0 420 085 189

Customer-spec. information
Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280
Rack travel in mm : 10.80...10.90
Del.quantity cm3/ : 8.2...8.4
100 s: (8.0...8.6)
Spread cm3 : 0.3
100 s: (0.6)
2nd speed rpm : 350.0
Rack travel in mm : 6.0...6.8
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1280
Aneroid pressure h: 700
Del.quantity : 82.0...84.0
1000 : (80.0...86.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1390...1420
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.00...6.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1280
Rack travel in m: 10.80...10.90
2nd speed rpm : 600
Rack travel in m: 11.70...11.80
3rd speed rpm : 1000
Rack travel in m: 11.70...11.80
4th speed rpm : 1175
Rack travel in m: 11.00...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...9.90

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.70...10.90
2nd pressure hPa : 300
Rack travel in m: 11.20...11.40
3rd pressure hPa : 700
Rack travel in m: 11.70...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 75.0...78.0
1000 s: (72.5...80.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.80
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 474 023

Injection pump
Pump designation : PES4MW100/72ORS1212
EP type number : 0 413 404 114
Governor
Governor design. : RSV350...1300MWOA329
-13
Governor no. : 0 420 085 191

Customer-spec. information
Customer : MB-NFZ

Engine : OM 364 LA

1st version kW : 100.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.5...6.8
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 700

Del.quantity : 101.0...103.0
1000 : (99.0...105.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 14.50
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 82...90
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.50...6.80

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 12.30...12.50
3rd pressure hPa : 700
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...95.0
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.50...6.80
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 22.01.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 081B
Injection pump
Pump designation : PES6MW100/720RS1196
EP type number : 0 413 406 184
Governor
Governor design. : RSV350...1050MWOA338
Governor no. : 0 420 085 138

Customer-spec. information
Customer : LIEBHERR

Engine : D 916 T

1st version kw : 150.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.40...3.50
: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.0...4.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 750

Del.quantity : 129.0...131.0

1000 : (127.0...133.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80

Speed rpm : 1030...1045
2nd rack travel in: 4.00
Speed rpm : 1050...1080
3rd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 3.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 3.50...3.90
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.80...10.90
2nd speed rpm : 500
Rack travel in m: 10.80...10.90
3rd speed rpm : 800
Rack travel in m: 10.80...10.90
5th speed rpm : 400
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 550

1st pressure hPa : 400
Rack travel in m: 10.20...10.40
2nd pressure hPa : 750
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 500
Del.quantity cm3/ : 130.0...133.0
1000 s: (127.5...135.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 111.0...113.0
1000 s: (109.0...115.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1030...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.00...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7, B
 Edition : 14.02.92
 Replaces : 04.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 106
 Injection pump
 Pump designation : PES6MW100/320RS1213
 EP type number : 0 413 406 203
 Governor
 Governor design. : RSV350...750MW7A345
 Governor no. : 0 420 085 168

Customer-spec. information
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 159.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 162.5...164.5

1000 : (160.5...166.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.20
Speed rpm : 750...760
2nd rack travel in: 4.00
Speed rpm : 795...805
3rd rack travel in: 4.00
Speed rpm : 800...810
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 750...760

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 21.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 476 112

Injection pump
Pump designation : PES6MW100/720RS1225
EP type number : 0 413 406 212
Governor
Governor design. : RSV400...1000MW1A338
-1
Governor no. : 0 420 085 184

Customer-spec. information
Customer : LIEBHERR

Engine : D 916 TI

1st version kW : 173.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance ± - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 14.0...14.2

100 s: (13.8...14.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 750

Del.quantity : 140.5...142.5

1000 : (138.5...144.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1075...1105
3rd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.40...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.00...13.10
2nd speed rpm : 500
Rack travel in m: 13.10...13.30
3rd speed rpm : 700
Rack travel in m: 13.00...13.20
5th speed rpm : 450
Rack travel in m: 13.80...14.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 10.90...11.10

Measurement

Speed 1/min : 550

1st pressure hPa : 300
Rack travel in m: 11.30...11.40
2nd pressure hPa : 450
Rack travel in m: 12.30...12.60
3rd pressure hPa : 750
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 500

Del.quantity cm3/ : 136.5...139.5
1000 s: (134.0...142.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 100.5...102.5
1000 s: (98.5...104.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 476 114

Injection pump
Pump designation : PES6MM100/72ORS1131-
1
EP type number : 0 413 406 165
Governor
Governor design. : RSV750...1100MWOA325
-4
Governor no. : 0 420 085 188

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.8...6.3
Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 82...90

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00

Speed rpm : 1120...1125 *

2nd rack travel in: 4.00
Speed rpm : 1145...1158
3rd rack travel in: 4.00
Speed rpm : 1151...1163
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080
Rack travel in m: 13.00...13.10
2nd speed rpm : 925
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 13.90...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1120...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

K07

Speed rpm : 350
Rack travel in mm : 5.80...6.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 14.02.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 115
 Injection pump
 Pump designation : PES6MW100/32ORS1226
 EP type number : 0 413 406 213
 Governor
 Governor design. : RSV350...750MW7A345-1
 Governor no. : 0 420 085 190

Customer-spec. information
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 185.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

K08

Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.70...14.80
 Del.quantity cm3/ : 19.3...19.5
 100 s: (19.1...19.7)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 193.0...195.0
 1000 : (191.0...197.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 82...90

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.70
Speed rpm : 750...760
2nd rack travel in: 4.00
Speed rpm : 795...805
3rd rack travel in: 4.00
Speed rpm : 800...810
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 750...760

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

: IHC #1819368C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 116
Injection pump
Pump designation : PES6MW100/72ORS1131
EP type number : 0 413 406 123
Governor
Governor design. : RSV350...1300MWOA329
-14
Governor no. : 0 420 085 192

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 10.50...10.60

Del. quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del. quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 800

Del. quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.50

Speed rpm : 1330...1335

2nd rack travel in: 4.00

Speed rpm : 1410...1423
3rd rack travel in: 4.00
Speed rpm : 1416...1428
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.00...6.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1280
Rack travel in m: 10.50...10.60
2nd speed rpm : 800
Rack travel in m: 11.20...11.30
3rd speed rpm : 1100
Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.70...9.90
2nd pressure hPa : 400
Rack travel in m: 10.50...10.70
3rd pressure hPa : 800
Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm3/ : 88.0...91.0
1000 s: (85.5...93.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a11
Edition : 04.02.92
Replaces : 08.06.90
Test oil : ISO-4113

Combination no. : 9 400 230 089

Injection pump
Pump designation : PES6A1000320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100AOC2190
-3R
Governor no. : 9 420 234 125

Customer-spec. information
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 129.0
Rated speed : 2200
2nd version kW : ?
3rd version kW : ?
4th version kW : ?

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 95.5...97.5

1000 : (93.5...99.5)

Spread cm3 : 4.00

1000 : (6.50)

2nd version

Speed rpm : 1100

Aneroid pressure h: -

Del.quantity cm3/ : 126.5...128.5

1000 s: (124.5...130.5)

Spread cm³ : 3.5
 1000 s: (6.0)

3rd version
 Speed rpm : 1250
 Aneroid pressure h: -
 Del.quantity cm³/ : 121.0...123.0
 1000 s: (119.0...125.0)

Spread cm³ : 3.5
 1000 s: (6.0)

4th version
 Speed rpm : 1100
 Aneroid pressure h: -
 Del.quantity cm³/ : 96.5...98.5
 1000 s: (94.5...100.5)

Spread cm³ : 3.5
 1000 s: (6.0)

RATED SPEED

1st version
 Control lever
 position degrees: 41...49

Testing:
 1st rack travel in: 9.60
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00
 Speed rpm : 1190...1220
 3rd rack travel in: 4.00
 Speed rpm : 1190...1220
 4th rack travel in: 1300
 Speed rpm : 0.30...1.40

2nd version
 Control lever
 position degrees: 39...47

Testing:
 1st rack travel in: 11.70
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00
 Speed rpm : 1200...1230
 3rd rack travel in: 4.00
 Speed rpm : 1205...1235
 4th rack travel in: 1300
 Speed rpm : 0.30...1.40

3rd version
 Control lever
 position degrees: 48...56

Testing:
 1st c-rod trav.mm : 11.00
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1355...1385
 3rd rack travel in: 4.00
 Speed rpm : 1360...1390
 4th rack travel in: 1450
 Speed rpm : 0.30...1.40

4th version
 Control lever
 position degrees: 46...54

Testing:
 1st rack travel in: 9.70
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00
 Speed rpm : 1200...1230
 4th rack travel in: 1300
 Speed rpm : 0.30...1.40

LOW IDLE 1
 Control lever
 position degrees: 19...27
 Setting point w/out bumper spring
 Speed rpm : 400
 Rack travel in mm : 5.4

Testing:
 Speed rpm : 100
 Minimum rack travel: 19.00
 Speed rpm : 400
 Rack travel in mm : 5.80...6.00
 Rack travel in mm : 2.00
 Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 4th version
 1st speed rpm : 1100
 Rack travel in m: 10.7...10.8
 2nd speed rpm : 750
 Rack travel in m: 12.3...12.5

FUEL DELIVERY CHARACTERISTICS

2nd version
 Speed rpm : 750
 Del.quantity cm³/ : 122.0...126.0
 1000 s: (120.0...128.0)

3rd version
 Speed rpm : 750
 Del.quantity cm³/ : 122.0...126.0
 1000 s: (120.0...128.0)

4th version
 Speed rpm : 750
 Del.quantity cm³/ : 119.5...123.5
 1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1140...1150

2nd version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1140...1150

3rd version

1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1290...1300

4th version

1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: VERS.1=CDC# 3915960
: 2=3909940,3=3907180
: 4=3906545

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 4.3.92
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100AOC2190
-8R
Governor no. : 9 420 234 137

Cust. part no. : T3

Customer spec. information
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : -
2nd version kW : ?

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 12.2...12.4
100 s: (12.0...12.6)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 400
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 122.5...124.5
1000 : (120.5...126.5)

Spread cm3 : 3.50
1000 : (6.00)

2nd version
Speed rpm : 1000
Del.quantity cm3/ : 119.0...121.0
1000 s: (117.0...123.0)

Spread cm3 : 3.5
1000 s: (6.0)

RATED SPEED

1st version
Control lever
position degrees: 38...46

Testing:

1st rack travel in: 11.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1165
3rd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1200
Speed rpm : 0.30...1.40

2nd version
Control lever
position degrees: 34...42

Testing:

1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1075...1105
3rd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...297
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 440...500

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1100

2nd version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: VERS.1=CDC # 3906547
: VERS.2=CDC # 3906551

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a13
Edition : 05.03.92
Replaces : 01.02.90
Test oil : ISO-4113

Combination no. : 9 400 230 099

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1050AOC2190
-10R
Governor no. : 9 420 234 142

Customer-spec. information
Customer : C.D.C.

Engine : 6 C 8.3

1st version kW : 89.0
Rated speed : 2100
2nd version kW : ?
3rd version kW : ?
4th version kW : ?
5th version kW : ?

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 4.00

1000 : (6.50)

2nd version

Speed rpm : 1100
Del.quantity cm3/ : 105.5...107.5
1000 s: (103.5...109.5)
Spread cm3 : 3.5
1000 s: (6.0)

3rd version

Speed rpm : 1100
Del.quantity cm3/ : 88.0...90.0
1000 s: (86.0...92.0)
Spread cm3 : 3.5
1000 s: (6.0)

4th version

Speed rpm : 1050
Del.quantity cm3/ : 108.5...110.5
1000 s: (106.5...112.5)
Spread cm3 : 3.5
1000 s: (6.0)

5th version

Speed rpm : 1000
Del.quantity cm3/ : 98.5...100.5
1000 s: (96.5...102.5)
Spread cm3 : 3.5
1000 s: (6.0)

RATED SPEED

1st version

Control lever
position degrees: 41...49

Testing:

1st rack travel in: 8.60
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1200
Speed rpm : 0.30...1.40

2nd version

Control lever
position degrees: 61...69

Testing:

1st rack travel in: 10.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
3rd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1250
Speed rpm : 0.30...1.40

3rd version

Control lever
position degrees: 45...53

Testing:

1st c-rod trav.mm : 9.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00

Speed rpm : 1180...1210
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.30...1.40

4th version

Control lever
position degrees: 41...49

Testing:

1st rack travel in: 10.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1140...1170
3rd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1200
Speed rpm : 0.30...1.40

5th version

Control lever
position degrees: 36...44

Testing:

1st rack travel in: 9.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1085...1115
3rd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050
Rack travel in m: 9.60...9.70
2nd speed rpm : 750
Rack travel in m: 10.40...10.60

Torque control curve - 3rd version

1st speed rpm : 1100
Rack travel in m: 10.0...10.1
2nd speed rpm : 800
Rack travel in m: 10.5...10.7

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 86.5...90.5
1000 s: (84.5...92.5)

3rd version

Speed rpm : 800
Del.quantity cm³/ : 92.0...96.0
1000 s: (90.0...98.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1095...1105

2nd version

1mm rack travel less than
full load rack tr: 10.30
Speed rpm : 1140...1150

3rd version

1mm rack travel less than
full load rack tr: 9.00
Speed rpm : 1140...1150

4th version

1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1090...1100

5th version

1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

K19

: 1.VERS=CDC # 3915964
Adjustment without torque-control 3906537
spring retainer with 1 mm less 5=3906540
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 k
Edition : 05.03.92
Replaces : 08.06.90
Test oil : ISO-4113

Combination no. : 9 400 230 102

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1050AJC2216
R

Governer no. : 9 420 234 146

Customer-spec. information
Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 141.7
Rated speed : 2100
2nd version kW : ?

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

K20

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

2nd version

Speed rpm : 1100

Del.quantity cm3/ : 114.5...116.5

1000 s: (112.5...118.5)

Spread cm3 : 3.5

1000 s: (6.0)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testing:
1st rack travel in: 10.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
3rd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.30...1.40

2nd version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.15
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 25...34
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.10...11.20
2nd speed rpm : 750
Rack travel in m: 12.60...12.80

Torque control curve - 2nd version
1st speed rpm : 1100
Rack travel in m: 12.1...12.2
2nd speed rpm : 750
Rack travel in m: 13.4...13.6

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750

Del.quantity cm³/ : 126.0...130.0
1000 s: (124.0...132.0)

2nd version
Speed rpm : 750
Del.quantity cm³/ : 135.0...138.0
1000 s: (132.5...140.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1090...1100

2nd version
1mm rack travel less than
full load rack tr: 11.15
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: 1.VERS= CDC #3915968
: 2.VERS= CDC #3908326

Adjust stop lever to 0.5...1.0 mm
before stop.

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 10.03.92
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/10F210DL4-1
Type number : 0 460 404 073

Customer-specific information
Customer : VM

Engine : HR 425 CLIRS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1,2...1,6
Shutoff
electromagnet Volt: 12,0

Supply-pump pressure

Speed 1/min: 1000

K22

Charge press hPa: 1000
Setting value bar: 4,7...5,3
Shutoff
electromagnet Volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65,5...66,5

Shutoff
electromagnet Volt: 12,0
Dispersion cm3/: 3,0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 43,0...44,0

Shutoff
electromagnet Volt: 12,0

Low-idle speed regulation

Speed 1/min: 450
Charge press hPa: -
Del. quantity cm3/
1000S.: 13,0...17,0

Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 3,0
1000S.: -

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40,0...46,0

Shutoff
electromagnet Volt: 12,0

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm3/: -
mind 1000S.: 35,0

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 7,0...9,0
Shutoff
electromagnet Volt: 12,0

SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Charge press hPa: -
Supply pump
pressure
difference bar: 0,1...0,3
Shutoff
electromagnet Volt: 12

Inspection pump test specifications
Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1,2...1,6
mm: (0,7...2,1)
electromagnet Volt: 12,0
2nd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 4,0...4,8
mm: (3,7...5,1)
Shutoff
electromagnet Volt: 12,0
3rd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7,0...7,8
mm: (6,7...8,1)

Shutoff
electromagnet Volt: 12,0

Supply pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 1000
Supply pump
pressure bar: 3,8...4,4
Shutoff
electromagnet Volt: 12,0
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply pump
pressure bar: 4,7...5,3
Shutoff
electromagnet Volt: 12,0
3rd speed 1/min: 2100
Charge press. hPa: 1000
Supply pump
pressure bar: 7,6...8,2
Shutoff
electromagnet Volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0

Overflow : 41,6...83,3
quantity cm3/10s: (26,6...98,3)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Overflow : 55,5...138,8
quantity cm3/10s: (40,5...153,3)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 7,0
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 55,5...56,5
1000s.: (53,5...58,5)
2nd speed 1/min: 2500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 0,0...8,0
1000s.: -
3rd speed 1/min: 2300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 41,0...45,0
1000s.: (39,0...47,0)
4th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 63,0...66,0
1000s.: (61,5...67,5)
5th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 65,5...66,5
1000s.: (64,0...68,0)
6th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 65,5...68,5
1000s.: (64,0...70,0)
7th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12,0
Del. quantity cm3/: 43,0...44,0
1000s.: (41,0...46,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Charge press. hPa: -
Del. quantity cm³/: 0,0...3,0
1000S.: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 13,0...17,0
1000S.: (10,0...20,0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 2,5...7,5
1000S.: (2,0...8,0)

3rd speed 1/min: 600
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 0,0...5,0
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm³/: 13,0...19,0 *
difference 1000S.: -
Shutoff
electromagnet Volt: 12,0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
Charge press. hPa: -
TD-travel : 1,4...1,6 *
Shutoff
electromagnet Volt: 12,0

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12,0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 42,5...44,5
1000S.: (41,0...46,0)

Automatic starting fuel delivery:

1st speed 1/min: 400
Charge press. hPa: -

Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 45,0...65,0
1000S.: -

2nd speed 1/min: 550
Charge press. hPa: -
Shutoff
electromagnet Volt: 12,0
Del. quantity cm³/: 25,0...45,0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,2...5,6
MS mm: 0,6...1,0
SVS max. mm: 4,3
LDA stroke mm: 7,0

Ajustement Potentiometer:

Angle for
pot. °: 45
Supply voltage
pot. volt: 5,0
Output volt
pot. volt: 2,95

Remarks:
Overflow restriction 0.55 mm - Part No.
..303

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 646 266AA

Injection pump
Pump designation : PE6A95D410LS2587
EP type number : 0 410 696 983
Governor
Governor design. : RQV300...1150AB1088L
Governor no. : 0 420 212 115

Customer-spec. information
Customer : KHD

Engine : F6L413 FW

1st version kW : 92.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 9.00...12.00

K25

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.20...8.30

Del.quantity cm3/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.60

2nd speed rpm : 390
travel mm : 2.20...2.60

3rd speed rpm : 1195
travel mm : 8.70...9.10

4th speed rpm : 1245
travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 73.0...74.0

1000 : (71.0...76.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 7.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 300...420

TORQUE CONTROL
Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.20...8.30
2nd speed rpm : 800
Rack travel in m: 9.10...9.30
3rd speed rpm : 1000
Rack travel in m: 8.60...8.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm³/ : 74.5...77.5
1000 s: (72.0...80.0)
Speed rpm : 100
Del.quantity cm³/ : 64.5...69.5 *
1000 s: (62.0...72.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Speed rpm : 100
Del.quantity cm³/ : 64.5...69.5 *
1000 s: (62.0...72.0)
Rack travel in mm : 10.4...10.6

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing
APPLICATION

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 j 1
 Edition : 03.04.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 400 844 096
 Injection pump
 Pump designation : PES4A95D410RS2809
 EP type number : 0 410 894 993
 Governor
 Governor design. : RQV300...1400AB1065-23L
 Governor no. : 0 420 212 227

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed - rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 64.5...66.5

1000 : (62.5...68.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.10...11.20
3rd speed rpm : 630
Rack travel in m: 10.90...11.20
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 630
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 925
Del.quantity cm3/ : 59.0...63.0
1000 s: (56.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.40...14.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y 1
Edition : 13.03.92
Replaces : 10.91
Test oil : ISO-4113

Combination no. : 0 400 846 580

Injection pump
Pump designation : PES6A95D32ORS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1350AB1248-1R
Governor no. : 0 420 213 121

Customer-spec. information
Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

L01

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.7...2.1
100 s: (1.5...2.3)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 7.30...7.50
2nd speed rpm : 1460
travel mm : 8.10...8.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Aneroid pressure h: 900
Del.quantity : 84.0...86.0
1000 : (82.0...88.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.30
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.9...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 215
Rack travel in m: 10.80...10.90
3rd pressure hPa : 345
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 75.0...79.0
1000 s: (73.0...81.0)

BREAKAWAY

L02

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks: : NAVISTAR #1818796C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 s
Edition : 13.03.92
Replaces : 07.91
Test oil : ISO-4113

Combination no. : 0 400 846 582

Injection pump
Pump designation : PES6A95D320RS2796
EP type number : 0 410 896 901
Governor
Governor design. : RQ300/1300AB1253-1R
Governor no. : 0 420 201 650

Customer spec. information
Customer : DAF

Engine : NS 156G

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 545...585

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1290

Rack travel in m: 12.60...12.70

2nd speed rpm : 750

Rack travel in m: 14.20...14.80

3rd speed rpm : 960

Rack travel in m: 13.50...14.10

4th speed rpm : 1055

Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...11.00

2nd pressure hPa : 260

Rack travel in m: 12.30...12.40

3rd pressure hPa : 210

Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1290

Del.quantity cm³/ : 87.0...89.0

1000 s: (84.5...91.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm³/ : 44.5...45.5

1000 s: (42.5...47.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Del.quantity cm³/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 4
 Edition : 03.04.92
 Replaces : 03.91
 Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-22L
 Governor no. : 0 420 212 226

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 6.1...6.3
 100 s: (5.9...6.5)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del.quantity cm3/ : 0.8...1.2
 100 s: (0.5...1.4)

Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 61.0...63.0
 1000 : (59.0...65.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 9.10
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 500...650

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.10...10.20
2nd speed rpm : 400
Rack travel in m: 11.30...11.60
3rd speed rpm : 630
Rack travel in m: 10.90...11.20
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm³/ : 49.0...52.0
1000 s: (46.5...54.5)
Speed rpm : 630
Del.quantity cm³/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 925
Del.quantity cm³/ : 57.0...61.0
1000 s: (54.5...63.5)

BREAKAWAY

1st version

L06

1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 e
 Edition : 20.03.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 400 846 597

Injection pump
 Pump designation : PES6A90D410RS2813
 EP type number : 0 410 896 039
 Governor
 Governor design. : RQV300...1250AB1264-L
 Governor no. : 0 420 212 233

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8065.25.000

1st version kW : 145.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 7.9...8.0
 100 s: (7.7...8.2)

Spread cm3 : 0.3
 100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 8.6...8.8
 Del.quantity cm3/ : 1.3...1.7
 100 s: (1.1...1.9)

Spread cm3 : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.60...1.10

2nd speed rpm : 445
 travel mm : 2.20...2.70

3rd speed rpm : 540
 travel mm : 2.80...3.30

4th speed rpm : 897
 travel mm : 5.00...5.50

5th speed rpm : 1324
 travel mm : 8.00...8.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1455
 Rack travel in mm : 9.60...12.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 700
 Del.quantity : 79.0...80.0
 1000 : (77.0...82.0)

Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Testing:

1st rack travel in: 10.70
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1510
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83

Testing:

Speed rpm : 225
Minimum rack travel: 12.10
Speed rpm : 325
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 400
Rack travel in m: 13.30...13.40
3rd speed rpm : 700
Rack travel in m: 12.60...12.80
4th speed rpm : 915
Rack travel in m: 12.10...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 700
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : -
Rack travel in m: 11.00...11.10
2nd pressure hPa : 315
Rack travel in m: 11.60...11.70
3rd pressure hPa : 280

Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 81.0...83.0
1000 s: (78.5...85.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 51.0...52.0
1000 s: (49.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 z 1
 Edition : 13.03.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 400 846 603

Injection pump
 Pump designation : PES6A95D32ORS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1251-1R
 Governor no. : 0 420 213 125

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 142.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

LD9

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 8.4...8.6
 100 s: (8.2...8.8)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.8...6.0
 Del.quantity cm3/ : 1.7...2.1
 100 s: (1.4...2.3)

Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 7.30...7.50
 2nd speed rpm : 1460
 travel mm : 8.10...8.50
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 900
 Del.quantity : 84.0...86.0
 1000 : (82.0...88.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.30
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 12.30...12.40
2nd speed rpm : 850
Rack travel in m: 13.10...13.20
3rd speed rpm : 1200
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 265
Rack travel in m: 10.30...10.40
3rd pressure hPa : 560
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

L10

1st version
Aneroid pressure h: 900
Speed rpm : 850
Del.quantity cm3/ : 96.0...100.0
1000 s: (94.0...102.0)
Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 60.5...64.5
1000 s: (58.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1818798C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y 2
 Edition : 13.03.92
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 604
 Injection pump
 Pump designation : PES6A95D32ORS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1248-2R
 Governor no. : 0 420 213 126
 Customer-spec. information
 Customer : NAVISTAR
 Engine : DT 360
 1st version kW : 127.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038
 Inlet press., bar : 2.80
 Test nozzle holder
 assembly : 1 688 901 110
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,5
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350
 Rack travel in mm : 11.90...12.00
 Del. quantity cm³/ : 7.9...8.1
 100 s : (7.7...8.3)
 Spread cm³ : 0.3
 100 s : (0.6)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 1.7...2.1
 100 s : (1.4...2.3)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 7.30...7.50
 2nd speed rpm : 1460
 travel mm : 8.10...8.50
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 900
 Del. quantity : 79.5...81.5
 1000 : (77.5...83.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 10.90
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 110
Rack travel in m: 10.40...10.50
3rd pressure hPa : 300
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 71.0...75.0
1000 s: (69.0...77.0)

BREAKAWAY

L12

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1819273C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 606

Injection pump
Pump designation : PES6A95D32ORS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1200AB1236-8R
Governor no. : 0 420 213 127

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.7...2.1
100 s: (1.5...2.3)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 8.60...9.00
2nd speed rpm : 1250
travel mm : 7.30...7.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 900
Del.quantity : 99.0...101.0
1000 : (97.0...103.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 12.30
Speed rpm : 1230...1260
2nd rack travel in: 4.00
Speed rpm : 1375...1385
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 225
Rack travel in m: 10.90...11.00
3rd pressure hPa : 460
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.5...78.5
1000 s: (72.5...80.5)

BREAKAWAY

L14

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1230...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1819325C9?

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 846 608

Injection pump
Pump designation : PES6A95D32ORS2796
EP type number : 0 410 896 901
Governor
Governor design. : RQ300/1300AB1253-3R
Governor no. : 0 420 201 654

Customer-spec. information
Customer : DAF

Engine : NS 156G

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 12.60...12.70
2nd speed rpm : 750
Rack travel in m: 14.20...14.80
3rd speed rpm : 960
Rack travel in m: 13.50...14.10
4th speed rpm : 1055
Rack travel in m: 12.90...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 250
Rack travel in m: 12.30...12.40
3rd pressure hPa : 90
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1290
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 45.5...46.5
1000 s: (43.5...48.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MM 4,1 b 5
Edition : 20.03.92
Replaces : 02.91
Test oil : ISO-4113

Combination no. : 0 400 864 084

Injection pump
Pump designation : PES4A90D320/3RS2659
EP type number : 0 410 894 028
Governor
Governor design. : RSV325...125UADC2182
-8R
Governor no. : 0 420 233 277

Customer-spec. information
Customer : MM

Engine : D226B-4

1st version kW : 74.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00
Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0
Rack travel in mm : 7.2...7.4
Del.quantity cm3/ : 1.2...1.6
100 s: (1.0...1.8)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 700
Del.quantity : 80.5...82.5
1000 : (78.5...84.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:

1st rack travel in: 9.80
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1220...1250
3rd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 58...66
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.80...10.90
2nd speed rpm : 800
Rack travel in m: 12.30...12.40
4th speed rpm : 1000
Rack travel in m: 11.50...11.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 215
Rack travel in m: 11.50...11.60
3rd pressure hPa : 300
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

L18

Speed rpm : 800
Del.quantity cm3/ : 94.0...96.0
1000 s: (91.5...98.5)
Aneroid pressure h: 215
Speed rpm : 500
Del.quantity cm3/ : 78.0...80.0
1000 s: (75.5...82.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 68.0...69.0
1000 s: (66.0...71.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.20...7.40
Del.quantity cm3/ : 12.0...16.0
1000 s: (10.0...18.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a69
 Edition : 13.03.92
 Replaces : 09.89
 Test oil : ISO-4113
 Combination no. : 0 400 866 146
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100AUC2190
 -36R
 Governor no. : 0 420 233 243

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kw : 138.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

L19

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 12.6...12.8

Del.quantity cm3/ : 12.5...12.9
 100 s: (12.3...13.1)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 107.5...109.5

1000 : (105.5...111.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 27...35
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.40...11.50
2nd speed rpm : 750
Rack travel in m: 12.60...12.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90
Del. quantity cm³/ : 14.5...18.5
1000 s: (12.0...21.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3915952

Adjust stop lever to 0.5...1.0 mm
before stop.

L20

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L 8
 Edition : 13.03.92
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 400 866 150
 Injection pump
 Pump designation : PES6A100D320/3RS2763
 EP type number : 0 410 806 006
 Governor
 Governor design. : RSV400...1100AOC2190
 -45R
 Governor no. : 0 420 233 253

Customer-spec. information
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 375.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 2.1...2.5
 100 s: (1.8...2.7)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 106.5...108.5
 1000 : (104.5...110.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 51...59

Testing:
 1st rack travel in: 9.90
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00

Speed rpm : 1230...1240
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 31...39
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 119.5...123.5
1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 03.04.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 400 866 175

Injection pump
Pump designation : PES6A90D320/3RS2660
EP type number : 0 410 896 078
Governor
Governor design. : RSV325...1175A0C2247
-2R
Governor no. : 0 420 233 290

Customer-spec. information
Customer : MWM

Engine : TD226-B6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. in: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1175
Rack travel in mm : 11.10...11.20
Del. quantity cm³/ : 8.3...8.4
100 s: (8.1...8.6)
Spread cm³ : 0.3
100 s: (0.5)
2nd speed rpm : 350.0
Rack travel in mm : 6.8...7.0
Del. quantity cm³/ : 1.0...1.6
100 s: (0.8...1.8)
Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 700
Del. quantity : 83.0...84.0
1000 : (81.0...86.0)
Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Testing:

1st rack travel in: 10.10
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1270...1300
3rd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.80...11.90
3rd speed rpm : 800
Rack travel in m: 11.70...11.90
4th speed rpm : 960
Rack travel in m: 11.40...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 320
Rack travel in m: 11.60...11.70
3rd pressure hPa : 255
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

L24

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm³/ : 80.5...82.5
1000 s: (78.0...85.0)
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 85.0...88.0
1000 s: (82.5...90.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 66.0...67.0
1000 s: (64.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks:
: RENAULT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.04.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 874 252

Injection pump
 Pump designation : PES4A95D410RS2809-1
 EP type number : 0 410 894 992
 Governor
 Governor design. : RSV350...1400AOC2006
 -7L
 Governor no. : 0 420 232 575

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 6.4...6.6
 100 s: (6.2...6.8)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 8.0...8.4
 Del.quantity cm3/ : 1.0...1.4
 100 s: (0.7...1.6)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1380
 Del.quantity : 64.5...66.5
 1000 : (62.5...68.5)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 109...117

Testing:
 1st rack travel in: 9.40
 Speed rpm : 1433...1438
 2nd rack travel in: 4.00
 Speed rpm : 1491...1508
 4th rack travel in: 1575
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 8.00...8.40
Rack travel in mm : 2.00
Speed rpm : 490...550

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1380
Rack travel in m: 10.40...10.50
2nd speed rpm : 400
Rack travel in m: 11.70...11.80
3rd speed rpm : 900
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm3/ : 48.0...51.0
1000 s: (45.5...53.5)
Spread cm3 : -
1000 s: (5.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.30...16.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.00...8.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 8
Edition : 13.03.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 400 876 381

Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV425...1050AOC2252
-1L
Governor no. : 0 420 232 571

Customer spec. information
Customer : JOHN DEERE

Engine : 6076TRW-30

1st version kW : 131.5
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

L27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 11.30...11.40
Del.quantity cm³/ : 10.9...11.1
100 s : (10.7...11.3)

Spread cm³ : 0.4
100 s : (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 5.3...5.5
Del.quantity cm³/ : 2.1...2.5
100 s : (1.9...2.7)
Spread cm³ : 0.6
100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 109.0...111.0
1000 : (107.0...113.0)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:

1st rack travel in: 10.30
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1175
3rd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.30...11.40
2nd speed rpm : 750
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 134.5...138.5
1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 21.5...25.5
1000 s: (19.5...27.5)

Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE41833
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 500 1/min.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 6
Edition : 13.03.92
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV400...1100A2C2204
-8L
Governor no. : 0 420 232 551

Customer spec. information
Customer : JOHN DEERE

Engine : 6076TDW02

1st version kW : 128.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 190...200

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

M01

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 2.9...3.3

100 s: (2.7...3.5)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever
position degrees: 40...48

Testing:

1st rack travel in: 9.70
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.70...10.80
2nd speed rpm : 650
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 134.0...138.0
1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

MO2

Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 29.0...33.0
1000 s: (27.0...35.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47356
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 7
Edition : 13.03.92
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 400 876 391

Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV425...1100A2C2225
-5L
Governor no. : 0 420 232 566

Customer spec. information
Customer : JOHN DEERE

Engine : 6076ARW-09

1st version kW : 145.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.90...12.00
2nd speed rpm : 750
Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 535
Rack travel in m: 12.30...12.40
3rd pressure hPa : 720
Rack travel in m: 13.40...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm³/ : 143.5...147.5
1000 s: (141.5...149.5)
Aneroid pressure h: -
Speed rpm : 500

MD4

Del.quantity cm³/ : 129.0...133.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 26.0...30.0
1000 s: (24.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47502

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

The stop position of the control rod
must be easily reached with the stop
lever

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF
Edition : 20.03.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 400 876 393

Injection pump
Pump designation : PES6A90D410RS2723
EP type number : 0 410 896 085
Governor
Governor design. : RSV300...1350A0C2257
L
Governor no. : 0 420 232 568

Customer-spec. information
Customer : IVECO-AIFO

Engine : 8061.SRM 25

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 10.9...11.0
100 s : (10.7...11.2)

Spread cm³ : 0.3
100 s : (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del.quantity cm³/ : 2.3...2.7
100 s : (2.1...2.9)

Spread cm³ : 0.2
100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Del.quantity : 109.0...110.0
1000 : (107.0...112.0)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 100...108

Testing:

1st rack travel in: 12.70
Speed rpm : 1390...1400

2nd rack travel in: 4.00
Speed rpm : 1595...1625

4th rack travel in: 1700
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

5th speed rpm : 350

Rack travel in m: 15.10...15.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 98.0...100.0

1000 s: (95.5...102.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

Test electrically-released starting
quantity (EES) with 12 volts

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 6
Edition : 13.03.92
Replaces : 11.91
Test oil : ISO-4113

Combination no. : 0 400 876 394

Injection pump
Pump designation : PES6A100D41DRS2754
EP type number : 0 410 806 002
Governor
Governor design. : RSV425...1100AOC2234
-2L
Governor no. : 0 420 232 569

Customer spec. information
Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

M07

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.6...3.0
100 s: (2.4...3.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.60...10.70
2nd speed rpm : 700
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 125.0...128.0
1000 s: (122.5...130.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 26.0...30.0
1000 s: (24.0...32.0)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE51026
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Starting/full-load transition speed
from holding magnet = 500 1/min.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 395

Injection pump
Pump designation : PES6A100D410RS2676
EP type number : 9 410 230 023
Governor
Governor design. : RSV425...1100A2C2161
-1L
Governor no. : 9 420 234 133

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

M09

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 2.0...2.4

100 s: (1.8...2.6)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 98.5...100.5

1000 : (96.5...102.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.40...9.40
2nd speed rpm : 750
Rack travel in m: 10.60...10.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.60...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 80
Rack travel in m: 9.40...9.80
3rd pressure hPa : 175
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 116.0...119.0
1000 s: (114.0...121.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 86.0...90.0
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 20.5...24.5
1000 s: (18.5...26.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 13.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 396
 Injection pump
 Pump designation : PES6A95D32ORS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RSV350...1250A5C2258
 R
 Governor no. : 0 420 233 292
 Customer-spec. information
 Customer : NAVISTAR
 Engine : DT 466
 1st version kW : 142.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038
 Inlet press., bar : 2.80
 Test nozzle holder
 assembly : 1 688 901 110
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,5
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 13.40...13.50
 Del.quantity cm3/ : 9.7...9.9
 100 s: (9.5...10.1)
 Spread cm3 : 0.3
 100 s: (0.6)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.9...1.8)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : ?
 Rack travel in mm : ?

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 900
 Del.quantity : 97.0...99.0
 1000 : (95.0...101.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 52...60

Testing:

1st rack travel in: 12.40
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1355...1365
3rd rack travel in: 4.00
Speed rpm : 1360...1370
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 340
Rack travel in m: 10.50...10.60
3rd pressure hPa : 555
Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 66.0...70.0
1000 s: (64.0...72.0)

BREAKAWAY

1st version

M12

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 11.5...15.5
1000 s: (9.0...18.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: NAVISTAR #1818556C91
Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 397

Injection pump
Pump designation : PES6A95D410RS2797
EP type number : 0 410 896 900
Governor
Governor design. : RSV350...1400AOC2006
-8L
Governor no. : 0 420 232 580

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 100.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

M13

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1380

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1380

Del.quantity : 61.0...63.0

1000 : (59.0...65.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 9.70

Speed rpm : 1430...1435

2nd rack travel in: 4.00

Speed rpm : 1490...1507

4th rack travel in: 1650

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.1

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Rack travel in mm: 2.00

Speed rpm : 480...540

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1380

Rack travel in m: 10.10...10.20

2nd speed rpm : 400

Rack travel in m: 11.30...11.60

3rd speed rpm : 630

Rack travel in m: 10.90...11.20

4th speed rpm : 925

Rack travel in m: 10.40...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400

Del.quantity cm3/ : 49.0...52.0

1000 s: (46.5...54.5)

Speed rpm : 630

Del.quantity cm3/ : 49.0...53.0

1000 s: (46.5...55.5)

Speed rpm : 925

Del.quantity cm3/ : 57.0...61.0

1000 s: (54.5...63.5)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Del.quantity cm3/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 f
 Edition : 13.03.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 891
 Injection pump
 Pump designation : PE6P120A720RS3216
 EP type number : 0 411 826 781
 Governor
 Governor design. : RQV300...975PA898K
 Governor no. : 0 421 815 197

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.269

1st version kW : 261.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.80...12.90

Del. quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...2.00

2nd speed rpm : 400

travel mm : 3.20...4.00

3rd speed rpm : 750

travel mm : 6.70...7.10

4th speed rpm : 975

travel mm : 9.60...9.80

5th speed rpm : 1200

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1015

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

Del.quantity : 235.0...237.0
1000 : (232.0...240.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.80
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 280...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.80...12.90
2nd speed rpm : 830
Rack travel in m: 12.40...12.60
3rd speed rpm : 500
Rack travel in m: 11.30...11.50
4th speed rpm : 350
Rack travel in m: 11.20...11.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 975
Pressure hPa : 1200
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 600

M16

Rack travel in m: 11.40...11.50
3rd pressure hPa : 400
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 500
Del.quantity cm3/ : 188.0...194.0
1000 s: (185.0...197.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAE 12,0 a
Edition : 27.03.92
Replaces : 01.92
Test oil : ISO-4113

Combination no. : 0 401 846 933

Injection pump
Pump designation : PE6P110A320RS3260
EP type number : 0 411 816 775
Governor
Governor design. : RQ250/1050PA969
Governor no. : 0 421 801 538

Customer spec. information
Customer : HAEP

Engine : X6130 NA

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1035

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 13.0...13.3

100 s: (12.7...13.5)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm³/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 12.60...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1035

Del.quantity : 130.0...133.0

1000 : (127.5...135.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 13.4

Testing:

1st rack travel in: 10.40

Speed rpm : 1085...1100

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed rpm : 0.00...1.80

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack trave: 9.30
Speed rpm : 250
Rack travel in mm : 7.70...7.90
Rack travel in mm : 2.00
Speed rpm : 295...335

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1035
Rack travel in m: 11.40...11.50
2nd speed rpm : 600
Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 129.0...134.0
1000 s: (126.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1085...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.60...8.00
Del.quantity cm3/ : 15.0...20.0
1000 s: (12.5...22.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAE
Edition : 27.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 856 706

Injection pump
Pump designation : PE6P110A721RS3101
EP type number : 0 411 816 725
Governor
Governor design. : RQ300/1200PA412
Governor no. : 0 421 801 172

Customer-spec. information
Customer : HAEP

Engine : WD615.67

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed! rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1325...1355

4th rack travel in: 1450

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 405...445

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.60...12.90

3rd speed rpm : 985

Rack travel in m: 12.40...12.60

4th speed rpm : 1075

Rack travel in m: 12.20...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.50...9.70

2nd pressure hPa : 420

Rack travel in m: 11.50...11.60

3rd pressure hPa : 330

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm3/ : 165.0...169.0

1000 s: (163.0...171.0)

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 112.0...114.0

1000 s: (109.5...116.5)

BREAKAWAY

M20

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 205.0...235.0

1000 s: (201.0...239.0)

Rack travel in mm : 17.30...17.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 03.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 791
Injection pump
Pump designation : PE6P110A320LS3859
EP type number : 0 411 816 784
Governor
Governor design. : RSV400...900P1A554
Governor no. : 0 421 833 376

Customer-spec. information
Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 230.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness : 8.00X2.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

M21

Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm³/ : 18.3...18.5

100 s: (18.0...18.7)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 183.0...185.0

1000 : (180.5...187.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 13.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...80
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.9
Speed rpm : 400
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 450...510

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1200
Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.00...13.20
2nd pressure hPa : 525
Rack travel in m: 13.80...13.90
3rd pressure hPa : 475
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 160.0...162.0
1000 s: (157.5...164.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 19.0...24.0
1000 s: (16.5...26.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a42
Edition : 27.03.92
Replaces : 06.91
Test oil : ISO-4113
Combination no. : 0 402 036 081
Injection pump
Pump designation : PES6P120A720/3LS470-
2
EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1000PA813-16
Governor no. : 0 421 801 531

Customer-spec. information
Customer : MAN

Engine : D2866LF 04..LH01

1st version kW : 221.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.20
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 355...395

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.20...10.30
2nd speed rpm : 750
Rack travel in m: 10.90...11.10
3rd speed rpm : 850
Rack travel in m: 10.50...10.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 85
Rack travel in m: 9.30...9.40
3rd pressure hPa : 160
Rack travel in m: 9.70...10.00

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1000

Del.quantity cm3/ : 191.0...197.0
1000 s: (188.0...200.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 176.0...182.0
1000 s: (173.0...185.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7053

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u1
Edition : 13.03.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 402 036 740

Injection pump
Pump designation : PES6P120A720/3LS3255
EP type number : 0 412 026 739
Governor
Governor design. : RQ300/1000PA813-13
Governor no. : 0 421 801 529

Customer spec. information
Customer : MAN

Engine : D2366LF03

1st version kW : 273.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80

Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.00...15.10
2nd speed rpm : 700
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u6
Edition : 7.4.92
Replaces : 27.02.91
Test oil : ISO-4113

Combination no. : 0 402 036 744

Injection pump
Pump designation : PES6P120A720/3LS3255
EP type number : 0 412 026 739
Governor
Governor design. : RQV300...1000PA876-12
Governor no. : 0 421 813 897

Customer-spec. information
Customer : MAN

Engine : D2866LF05

1st version kW : 272.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

M27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 9.70...9.90

2nd speed rpm : 300

travel mm : 0.90...1.30

3rd speed rpm : 550

travel mm : 3.70...4.30

4th speed rpm : 800

travel mm : 6.60...7.00

5th speed rpm : 1300

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 244.0...246.0
1000 : (241.0...249.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 298...306

Testing:

1st rack travel in: 14.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 254...262

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.10...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 13.60...14.00

START CUT-OUT

M28

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.10
Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7039

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 r
Edition : 03.04.92
Replaces : 08.91
Test oil : ISO-4113

Combination no. : 0 402 046 829

Injection pump
Pump designation : PES6P120A320RS3284
EP type number : 0 412 026 749
Governor
Governor design. : RQV275...1050PA995-1
Governor no. : 0 421 813 941

Customer-spec. information
Customer : RVI

Engine : M1DR 062045 3/3

1st version kW : 186.0
Rated speed : 2100

TEST BENCH EQUIPEMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1130
travel mm : 8.10...8.30

2nd speed rpm : 275
travel mm : 0.70...0.90

3rd speed rpm : 450
travel mm : 2.80...3.40

4th speed rpm : 750
travel mm : 5.50...5.90

5th speed rpm : 1450
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1220

Rack travel in mm : 9.20...11.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:

1st rack travel in: 9.50
Speed rpm : 1125...1135
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 243...251

Testing:

Speed rpm : 200
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 340...440

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.20
2nd pressure hPa : 240
Rack travel in m: 10.10...10.20
3rd pressure hPa : 130
Rack travel in m: 9.40...9.60

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050

NO2

Del.quantity cm3/ : 144.0...150.0
1000 s: (141.0...153.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 101.0...103.0
1000 s: (98.0...106.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...194.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 22.0...26.0
1000 s: (19.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 14,9 g
Edition : 06.07.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 048 703

Injection pump
Pump designation : PES8P120A32ORS3175
EP type number : 0 412 028 703
Governor
Governor design. : RQ750PA804
Governor no. : 0 421 801 351

Customer-spec. information
Customer : RVI

Engine : MIVS(R)083530

1st version kW : 320.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 8- 4- 2- 7- 3-
6- 5

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 27.9...28.1

100 s: (27.6...28.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 4.4...4.8
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.4)
Spread cm3 : 0.8
100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 279.0...281.0
1000 : (276.0...284.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 11.40
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 782...795
4th rack travel in: 900
Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 750...755

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIN
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 048 707
Injection pump
Pump designation : PES8P120A32ORS3300
EP type number : 0 412 028 707
Governor
Governor design. : RQV350...1400PA1028
Governor no. : 0 421 813 987

Customer-spec. information
Customer : FINCANTIERI

Engine : 1308 V

1st version kW : 500.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
(3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 7- 8- 4- 5-
6- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1350
Rack travel in mm : 14.20...14.30
Del.quantity cm3/ : 27.5...27.7
100 s: (27.2...28.0)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 6.7...6.9
Del.quantity cm3/ : 3.6...4.2
100 s: (3.3...4.5)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1410
travel mm : 8.90...9.10
2nd speed rpm : 350
travel mm : 1.40...1.80
3rd speed rpm : 520
travel mm : 3.20...3.80
4th speed rpm : 910
travel mm : 5.20...5.60
5th speed rpm : 1650
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1415
Rack travel in mm : 12.90...15.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Aneroid pressure h: 1000

Del.quantity : 275.0...277.0
1000 : (272.0...280.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 13.20
Speed rpm : 1380...1390
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1650
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 67...75
Speed rpm : 350
Rack travel in mm : 6.70...6.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.40
2nd pressure hPa : 500
Rack travel in m: 12.90...13.10
3rd pressure hPa : 370
Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 291.0...297.0
1000 s: (288.0...300.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 1380...1390

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 435.0...465.0
1000 s: (431.0...469.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 36.0...42.0
1000 s: (33.0...45.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

APPLICATION :

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y
Edition : 13.03.92
Replaces : 12.91
Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
1
Governor no. : 0 421 833 276

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 AF & HF

1st version kW : 187.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

NO7

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.2...15.4

100 s : (15.0...15.6)

Spread cm3 : 0.4

100 s : (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 2.5...2.9
100 s : (2.3...3.2)
Spread cm3 : 0.6
100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 152.0...154.0
1000 : (150.0...156.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:

1st rack travel in: 11.00
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 740
Rack travel in m: 11.40...11.50
3rd pressure hPa : 955
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 184.0...188.0
1000 s: (182.0...190.0)
Aneroid pressure h: -
Speed rpm : 800

N08

Del.quantity cm3/ : 118.0...122.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 25.5...29.5
1000 s: (23.0...32.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 2
 Edition : 13.03.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 076 742
 Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1050P2A534-
 7
 Governor no. : 0 421 833 356

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HZ030

1st version kW : 193.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

N09

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.30...12.40
 Del.quantity cm3/ : 15.7...15.9
 100 s: (15.5...16.1)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 400.0
 Rack travel in mm : 6.7...6.9
 Del.quantity cm3/ : 3.9...4.3
 100 s: (3.6...4.5)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 900
 Del.quantity : 157.5...159.5
 1000 : (155.5...161.5)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 41...49

Testing:

1st rack travel in: 11.30
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1155...1165
3rd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.70...6.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.30...12.40
2nd speed rpm : 700
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 390
Rack travel in m: 11.40...11.50
3rd pressure hPa : 605
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 192.0...196.0
1000 s: (190.0...198.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 116.5...120.5
1000 s: (114.5...122.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 39.0...43.0
1000 s: (36.5...45.5)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 3
 Edition : 13.03.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 076 743
 Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV425...1100P2A534-8
 Governor no. : 0 421 833 370

Customer-spec. information

Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.00...12.10
 Del.quantity cm3/ : 15.2...15.4
 100 s: (15.0...15.6)
 Spread cm3 : 0.4
 100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 2.5...2.9
 100 s: (2.3...3.2)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 152.0...154.0
 1000 : (150.0...156.0)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 44...52

Testing:
1st rack travel in: 11.00
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.20...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 740
Rack travel in m: 11.40...11.50
3rd pressure hPa : 955
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 184.0...188.0
1000 s: (182.0...190.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 118.0...122.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version:
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 25.5...29.5
1000 s: (23.0...32.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: JOHN DEERE # RE47394

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIN
Edition : 27.03.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 076 744

Injection pump
Pump designation : PES6P120A720LS3298
EP type number : 0 412 026 754
Governor
Governor design. : RSV350...1200POA553
Governor no. : 0 421 833 371

Customer-spec. information
Customer : FINCANTIERI

Engine : L 1306

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 10.00...11.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 27.5...27.7
100 s: (27.2...28.0)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 7.4...7.6
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.4)
Spread cm3 : 1.0
100 s: (1.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 1300
Del.quantity : 275.0...277.0
1000 : (272.0...280.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 100...108

Testing:
1st rack travel in: 14.20
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1420...1450
3rd rack travel in: 4.00

Speed rpm : 1470...1530
4th rack travel in: 1650
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.0

Speed rpm : 350

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

Speed rpm : 670...730

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 15.20...15.30

2nd speed rpm : 500

Rack travel in m: 15.20...15.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1300

Rack travel mm : 15.20...15.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.90...11.10

2nd pressure hPa : 900

Rack travel in m: 14.60...14.70

3rd pressure hPa : 500

Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300

Speed rpm : 600

Del.quantity cm3/ : 286.0...292.0

1000 s: (283.0...295.0)

Spread cm3 : 10.00

1000 s: (14.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 155.0...157.0

1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 400.0...420.0

1000 s: (396.0...424.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

Test electrically-released starting
quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 13.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 746
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV625...1100P2A534-
 10
 Governor no. : 0 421 833 373

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 AZ 030

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Freestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 625.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 2.7...3.1

100 s: (2.5...3.3)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 153.0...155.0

1000 : (151.0...157.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.00
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 24...31
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 625
Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 700
Rack travel in m: 11.50...11.60
3rd pressure hPa : 915
Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 119.5...123.5
1000 s: (117.5...125.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 27.0...31.0
1000 s: (25.0...33.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47398

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 e
 Edition : 13.03.92
 Replaces : 01.90
 Test oil : ISO-4113
 Combination no. : 0 402 630 804
 Injection pump
 Pump designation : PE12P120A120RS7193
 EP type number : 0 412 620 820
 Governor
 Governor design. : RGV275...1000PA938
 Governor no. : 0 421 813 822

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

N17

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 13.50...13.60
 Del. quantity cm³/ : 37.9...38.1
 100 s: (37.6...38.4)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.8...6.2
 Del. quantity cm³/ : 2.7...3.3
 100 s: (2.4...3.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 0.60...1.00
 2nd speed rpm : 450
 travel mm : 3.00...3.40
 3rd speed rpm : 700
 travel mm : 5.00...5.40
 4th speed rpm : 1000
 travel mm : 7.60...7.80
 5th speed rpm : 1300
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 5.90...6.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 600
Rack travel in m: 13.10...13.20
3rd pressure hPa : 300
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 324.0...330.0
1000 s: (321.0...333.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 c3
Edition : 03.04.92
Replaces : 05.90
Test oil : ISO-4113
Combination no. : 0 402 650 205
Injection pump
Pump designation : PE12P120A120RS7106
EP type number : 0 412 620 800
Governor
Governor design. : RQV350...900PA935-1
Governor no. : 0 421 813 820

Customer-spec. information
Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 500

travel mm : 3.10...3.70

3rd speed rpm : 740

travel mm : 5.70...6.30

4th speed rpm : 960

travel mm : 8.60...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 339.0...341.0

1000 : (336.0...344.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 86...94

Testing:
Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 350
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 330...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 940...950

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
Edition : 13.03.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 630 808
Injection pump
Pump designation : PE12P120A12ORS7254
EP type number : 0 412 620 832
Governor
Governor design. : RQV275...1000PA938
Governor no. : 0 421 813 822

Customer-spec. information
Customer : BAUDOUIN

Engine : V12 BTI

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 019
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8
Test lines : 1 680 750 075
Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00

N21

Firing order : 1- 12- 9- 4- 5- 8-
11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 13.50...13.60
Del. quantity cm³/ : 37.9...38.1
100 s: (37.6...38.4)
Spread cm³ : 0.5
100 s: (0.9)
2nd speed rpm : 275.0
Rack travel in mm : 5.8...6.2
Del. quantity cm³/ : 2.7...3.3
100 s: (2.4...3.6)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 0.60...1.00
2nd speed rpm : 450
travel mm : 3.00...3.40
3rd speed rpm : 700
travel mm : 5.00...5.40
4th speed rpm : 1000
travel mm : 7.60...7.80
5th speed rpm : 1300
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1140
Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 5.90...6.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 600
Rack travel in m: 13.10...13.20
3rd pressure hPa : 300
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 324.0...330.0
1000 s: (321.0...333.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
APPLICATION :

Navy

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
 Edition : 27.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 630 809
 Injection pump
 Pump designation : PE12P120A120RS7253
 EP type number : 0 412 620 831
 Governor
 Governor design. : RQV400...750PA935
 Governor no. : 0 421 813 819

Customer-spec. information
 Customer : BAUDCUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

N23

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.3

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 419.0...421.0

1000 : (416.0...424.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: ?

Testing:

1st rack travel in: 13.70

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 781...794

4th rack travel in: 900

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 4...12

Setting point w/out bumper spring

Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack trave: 6.10
Speed rpm : 400
Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed 1/min : 340 (360)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 750...755

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 b
Edition : 27.03.92
Replaces : 07.90
Test oil : ISO-4113

Combination no. : 0 402 640 812

Injection pump
Pump designation : PE12P120A520LS7820
EP type number : 0 412 620 814
Governor
Governor design. : RGV350...1150PA870-4
Governor no. : 0 421 813 717

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed rpm : 600

travel mm : 3.30...3.80

3rd speed rpm : 960

travel mm : 5.30...5.80

4th speed rpm : 1206

travel mm : 7.90...8.40

5th speed rpm : 1291

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
 Aneroid pressure h: 1800
 Del.quantity : 312.0...314.0
 1000 : (309.0...317.0)
 Spread cm3 : 6.00
 1000 : (10.00)

RATED SPEED

1st version

Control lever
 position degrees: 113...121

Testing:

1st rack travel in: 13.30
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1270...1300
 4th rack travel in: 1350
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 62...70

Testing:

Speed rpm : 250
 Minimum rack trave: 7.00
 Speed rpm : 350
 Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
 Compensator Test

1st version

Setting
 Speed rpm : 500
 Pressure hPa : -
 Rack travel mm : 7.80...8.10

Measurement

Speed 1/min : 500

1st pressure hPa : 300
 Rack travel in m: 9.40...9.50
 2nd pressure hPa : 1100
 Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

N26

1st version

Aneroid pressure h: 1800
 Speed rpm : 750
 Del.quantity cm3/ : 303.0...313.0
 1000 s: (300.0...316.0)
 Spread cm3 : 10.00
 1000 s: (15.0)
 Aneroid pressure h: 1800
 Speed rpm : 1150
 Del.quantity cm3/ : 240.0...243.0 *
 1000 s: (237.0...246.0)
 Spread cm3 : 10.00
 1000 s: (15.0)
 Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 124.0...126.0
 1000 s: (121.0...129.0)
 Spread cm3 : 10.00
 1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 330.0...350.0
 1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c
Edition : 27.03.92
Replaces : 10.90
Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump
Pump designation : PE12P120A52QLS7826
EP type number : 0 412 620 817
Governor
Governor design. : RQV350...1150PA870-4
Governor no. : 0 421 813 717

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80
2nd speed rpm : 600
travel mm : 3.30...3.80
3rd speed rpm : 960
travel mm : 5.30...5.80
4th speed rpm : 1206
travel mm : 7.90...8.40
5th speed rpm : 1291
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1275
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 312.0...314.0
1000 : (309.0...317.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel min : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.80...9.90
2nd pressure hPa : 1100
Rack travel in m: 14.00...14.20

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

N28

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm³/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm³/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version:

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.